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THE

VICTORIAN NATURALIST:

THE JOURNAL & MAGAZINE

OF THE

Field Naturalists' Club of Victoria

VOL. I.

JANUARY 1884 TO APRIL 1885.

The Author of each Article is responsible for the facts and opinions he records.

South Melbourne:

J. C. MITCHELL, PRINTER, CLARENDON STREET.

1885.

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PRICE—SIXPENCE

South Mel[illegible]ne

J. C. MITCHELL, PR[illegible]N STREET.

INTRODUCTION.

It is now three years since the Field Naturalists' Club of Victoria was first formed. The club has supplied a want, and has steadily increased in numbers until over 150 members have been enrolled. Field work has been the main object of the Society, and the enlarged cabinets, and the exhibits at meetings, testify to the activity of members in this direction, while the number of careful observers of Nature in the colony has been greatly multiplied. Many who before worked alone have been encouraged by association with workers in kindred branches, and a substantial enthusiasm has been aroused in many who had before felt no interest in the subject.

Hitherto the proceedings of the Society have appeared in the "Southern Science Record," published by Mr. J. Wing, but it is now deemed time to bring out a periodical of our own. It is hoped that a larger field of usefulness will thus be opened up, and that both members and the public will gain by the publication of a monthly record of work and results, of original papers on Victorian Botany and Zoology, and of current notices of the occurrences and habitat of interesting forms. "The Naturalist" is also intended as a medium for the exchange of specimens, and space will be given for correspondence.

Lastly, the Club has decided to prepare, and to publish in this Magazine, scientific lists of the Victorian species of animals and plants for the use of collectors. Such lists cannot be considered to be complete even in the case of the most conspicuous and best-known groups. Additions may be made from time to time; in fact, the very publication is expected to stimulate members to the discovery and recognition of new forms. Great care will be exercised to exclude all doubtful species, and as the services of some of the most active practical naturalists in the colony have been secured, it is confidently expected that the catalogues will be of value in creating that exact knowledge of specific forms which will facilitate more advanced Biological studies, and in diffusing an acquaintance with the useful and hurtful organisms of Victoria, which must be of great practical and material benefit to the community.

FIELD NATURALISTS' CLUB OF VICTORIA.

PROCEEDINGS.

The usual monthly meeting of the Club was held in the Royal Society's Hall, on Monday evening, 21st inst.—Mr. T. A. F. Leith, one of the Vice-Presidents, presiding, and, considering the inclement weather that prevailed, there was a very good attendance of members.

Correspondence.—From the Secretary of the Entomological Department of the Warren Natural History Rooms, Warren, Mass., U.S., inviting interchange of specimens. The Secretary to reply that, as the Club had no collection of its own, it could not comply with the invitation, but would endeavour to induce individual members to take up the matter.

Members Elected.—Messrs. G. R. Hill, E. Shields, T. H. Ord, A. Borthwick, and Miss K. Coghill.

Nominations for Membership.—Messrs. Clarence Hicks and P. Cecchi.

Papers Promised.—"Victorian Orchids," part 4, by C. French; continuation of "Experiences of an Old Net," by Dr. T. P. Lucas; and on a subject unnamed, by H. Watts.

The following papers were read:—By C. French, "A few Remarks on a Curious Insect Phenomenon that Recently Occurred in his Specimen Room;" by J. F. Bailey, on "A New Species of Gordius or Hair Worm." Over this paper considerable discussion took place, principally on the subject of the life-histories of parasitic worms, the chief speakers being Messrs. Judd, Watts, J. F. Roberts, A. H. Lucas, and Dr. T. P. Lucas. Mr. Bailey mentioned that worms similar to the one shown and described by him had been found in the Yarra and the Yan Yean, and apprehended that fatality might arise to persons drinking these waters, and so absorbing the ova; but it was pointed out that it had been proved unquestionably that there was not the slightest probability of danger. He also mentioned that it was on record that a very long hair-worm had been found in a small carabus beetle, and Mr. Judd stated that he himself had taken one from the body of a spider. In the course of the discussion, Mr. Watts alluded to, and denied, the general belief that infusoria existed in the Yan Yean, as he had thoroughly satisfied himself that they do not.

The formation of a Postal Microscopical Society, similar to the one established in England, was advocated by Mr. Watts, who explained that the main object of the society was the transmission through the post, from member to member, of mounted specimens for examination, and then ultimate return to a recognised head

office. One of the boxes in use was shown by Mr. Watts, who stated that Dr. Morris, by whom it had been sent to him, desired to make it and the accompanying specimens a present to the Club after its return from Sydney. The general exhibition of specimens was an unusually interesting one. It comprised six species of Indian Ocean mollusca, viz., Spondylus tenuispinosus, S. auranteus, S. radians, Dolabella Rumphi and Umbella Indica, by J. F. Bailey; forty Humming birds, including a pair of Acestoura Helioderii, from Columbia, this being the smallest known bird, also fine specimens in flower of Spiranthes australis, Dipodium punctatum, and Cryptostylis longifolia, three orchids from the Mount Eliza district, by C. French; Birds' Eggs collected at Colac, also Sleeping Lizard from Daylesford, by T. Hyland; specimens of large Owl and Whistling Eagle, viz., Halliastur sphenurus and Athene strenura, by T. A. F. Leith; specimens of scrub from 300 miles north of Townsville, Queensland, by J. E. Prince; diseased and healthy leaves of the Coffee tree from Ceylon, by H. Watts: Kauri gum, by J. H. Matthias; Eggs of Argonauta tuberculata or Paper Nautilus, by J. H. Gatliff; thirty specimens of Coleoptera collected during the month, and specimens of Kilcunda coal, by F. G. A. Barnard; Beetles, including a new Longicorn allied to the genus Phoracantha, collected during the month by D. Best; nest of Mason Spider from North America, by G. R. Hill; Lepidoptera and Coleoptera collected since last meeting, also specimen of Polistes or Card-making Wasp and nest from Studley Park, by J. E. Dixon; and box of exotic insects and orchid in flower, Cryptostylis longifolia, by P. Dattari, who exhibited a diagram showing the relationships of the various families coming under the first section of the Coleoptera.

After a very pleasant Conversazione, the meeting separated about ten o'clock.

THE ORCHIDEÆ OF VICTORIA:

Their Habitats, with Cultural Notes.

BY C. FRENCH, BOTANIC GARDENS, MELBOURNE.

(Part I.—Read September 10th, 1883.)

Mr. President and Gentlemen of the F. N. Club of Victoria

Most of you are aware that some time since, I promised you a paper on the Terrestrial Orchids of this Colony. Since that time, however, I have thought it better to add to it the few

Epiphytic species which occur, though sparingly, in the mountainous districts of east Gippsland.

In preparing this paper, I wish it to be understood that I claim for it little or no scientific worth, as I have no desire to perpetrate any clumsy imitation of the splendid Botanic achievements of our learned and esteemed fellow-member, Sir F. Von Mueller, but simply to give you a short account of such of our native Orchids as may be met with by those who take an interest in the delightful study of nature's treasures, and also that our youthful members and others may be assisted in the recognition of the various species which they may come across during our Club excursions, which, by the way, I trust, may become more general and extended than they have hitherto been. Baron von Mueller, in one of his scientific and interesting papers, published in the S.S. Records, has told us he would wish to request that these lovely kinds of plants, of which many species are so local and so rarely flowering, should receive special attention from collectors, or to be secured even by those who are not engaged in Botanical pursuits, but could not fail to take notice of the beauty and oddness of Orchideous flowers, anywhere, even close to homesteads. I trust, therefore, that his wishes in this respect will be borne in mind by those interested, for as he further remarks, that there are yet chances of finding additional species, or at least adding some knowledge of their geographical distribution.

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In looking over a collection of our native orchids, we find, as a rule, green, or various shades of blue, to be the prevailing colour; but this only holds good so far as the terrestrial species are concerned, for in most of the Epiphytal species, we find yellow and white to predominate. It is true that we cannot boast of such splendid specimens as there are to be found in the tropical forests of Java, India, South America, &c., such as the Cattleyas, Stanhopeas, Vandas, &c., or the so-called cooler species, Odontoglosum, Masdevallia, &c.; still we have in Dendrobium speciosum one of the most beautiful of the whole order, and one which, if well grown, would hold its own in any company of Orchids staged for exhibition. Again, what could be more pleasing than the appearance of our Brighton heath ground in the Orchid season, when the very soil seems gay with the tints of the various species of Caladenia, Thelymitra, Glossodia, &c., to say nothing of the more soberly-coloured species of Pterostylis, Corysanthes, Lyperanthus, &c., and other curious kinds. An excellent and popular writer has said, that "everybody likes Orchids: they command the admiration or attract the attention of all classes of flower lovers. People doat upon roses, and rightly so, their beauty and their perfume quite justify the popular allegiance. Admitting," he says, "all this, it may yet be said, in a general sense, that their attractiveness is confined to the

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two qualities just mentioned, but in the case of Orchids there are so many features of interest, that each individual, we may almost say, may admire them for a different reason." The group Orchidaceæ seems to include within its limit all the attributes which make flowers attractive. Beauty of form and colour, quaintness of shape, now large now small, now mimicking in form a butterfly, in another species resembling a bird, in a third a reptile, in another presenting the aspect of some grotesque mask, flowering in winter, flowering in summer, growing in the ground, living on trees, thriving high up on the mountain side, flourishing in the moist hot woods of Java, abundant on English downs, to be found alike in the old hemisphere and in the new world, in the far north and in the extreme south.

(To be continued.)

CONTRIBUTIONS TO THE PHYTOGRAPHY OF AUSTRALIA,

By Baron Ferd. von Mueller, K.C.M.G., M D, Ph. D, F.R S.

Podopetalum Ormondi.—In the June number of the Melbourne Chemist, 1882, two genera of leguminous plants were defined, to one of which the name Podopetalum was given; but the record had to be limited to characteristics of leaves and flowers only, as fruits were not obtained by the discoverer, Mr. Persieh, who met this stately plant in forests near the Endeavour-river. As a species this plant remained unnamed in the periodical above quoted; but in the "Systematic Census of Australian Plants," issued at the end of 1882, p. 42, it appeared as Podopetalum Ormondi, in dedication to the honorable Francis Ormond, M.L.C., whose almost boundless munificence for raising ecclesiastic and educational institutions in this colony, was meriting a permanent token of appreciation also in botanic science. When the genus Podopetalum was first rendered descriptively known, its varied affinities to Castanospermum, Sophora and Ormosia were pointed out, as well as the difference, which separate it from these genera, so far as floral organisation is concerned; but no final systematic place could be assigned to the genus, so long as the fruit remained unknown. The latter has recently been obtained, and from the following description it will be observed, that the carpologic characteristics are almost those of Ormosia.

Pod on a stipe of rather more than half an inch length, somewhat compressed; valves coriaceous, tardily seceding, hardening through exsiccation, reaching a width of three-quarter inch more or less contracted between the seeds, dorsally undulating

becoming black outside ; pithy cross-walls imperfect or absent ; funicles thick, very short ; strophiole none ; seeds few, varying in form between roundish and quadrangular, measuring one-third to half an inch, slightly compressed ; hilum roundish-oval, only about one line long ; testa thinly crustaceous, smooth, bright scarlet ; albumen none ; embryo pale-yellowish, horny when dry ; radicle very short, next to the hilum.

To this information can now be added, that Podopetalum Ormondi forms a tree, attaining about fifty feet in height, the bark of the stem being smooth and greyish. It seems to be flowering and fruiting through many months, as both blossoms and pods were got in December.

This seems an apt opportunity to point out, that the genus Vieillardia is perhaps not combinable with Castanospermum, inasmuch as the leaves are abruptly pinnate, according to manuscript-notes received by the writer from the Abbè Montrouzier, although species with impari-pinnated and abruptly pinnated leaves are contained in Ormosia, according to Bentham and Hooker. The Veillardia grandiflora, from the isle Art near New Caledonia, must be an extremely showy plant, Montrouzier describing the flowers as numerous (-16) in a bunch, and to be each from one and a-half to two inches long.

ENTOMOLOGY.

LEPIDOPTERA OF THE MONTH,

By Dr. T. P. Lucas.

DIURNI.—The first brood of Papilio Mackayi is nearly over, and it is difficult to obtain good specimens. The second brood may be expected at the end of February or the beginning of March.

Pieris Aganippe, the larvæ of which were in December so numerous on the Wild Cherry (Exocarpus), is now emerging from the crysalis.

The Browns.—Xenia Klugii swarms everywhere, and X. Aclanta in the Ranges and near the Yarra. The first brood of Hipparchia abroma is about over. It is found in upland shady places.

The Blues.—Lycœna crinus may now be taken in shady woods at Hawthorn, about the Yarra, and in South Gippsland.

An allied form, taken by Mr. F. Spry, early in September at Brighton, has been found sparingly at Longwarry, by Mr. A. H. S. Lucas.

L. Phœbe is common everywhere by the roadsides.

L. Agricola should be taken sparingly at Brighton. I found this species recently emerged in November at Myrtleford.

Polyommatus bœticus this year is coloured more brilliantly than usual. It occurs plentifully at Cheltenham, and may be caught in the gardens of the suburbs. It has been taken once or twice near Plymouth, England, and is a common form on the continent of Europe.

Jackmenus evagorans, so abundant at Lilydale in December, is still on the wing. Mr. Dixon captured another species this month, with vermilion bars and dots on the under surface of both wings, also near Lilydale.

THE SKIPPERS.—Several are now flying. Telesto eclipsis may be taken in the Dandenong and South Gippsland ranges. T. flammeata may be looked for in the same localities.

Taractrocera papyrea is still common at Brighton in damp places.

MOTHS.—One of the Hawk Moths, Chœrocampa scrofa, was taken by my boys on blackberry flowers at dusk at Healesville.

The giant Endoxylon eucalypti may still be collected on the trunks of the gum trees and on fences in the day time. On the fences, too, the mimetic Hyperchromis ocularia. I have found a form allied to the latter, conspicuous by the longitudinal in place of transverse lines on the upper surface.

Ardicis fulvo-hista may now be taken on trunks of trees or among grass about Melbourne, but more freely in the ranges. Panagra aurinaria is now coming out in upland well-timbered paddocks. Manga gigantella is to be seen on wattles or other herbage. The beautiful Cosmodes elegans may occasionally be startled out of the grass.

Plusia argentifera flies around flowers at dusk. This species and P. verticillata (Golden Y), are representative, and have the habits of very closely allied English forms.

Another form analogous to the English Drinker in habits is Savala ocellata. Swarms of the larvæ have been feeding on the grass in the Melbourne parks, and the imago is now coming out from the pupa.

Drymania dimidiata is common on fences. The larvæ often destroys cereal crops wholesale, eating all before it.

The second brood of one of our Thorn Moths, Macaria remotaria, Var. frontaria, is now to be had everywhere The males and females are so unlike, as often to be mistaken for distinct species. The females are darker and blotched, the males lighter and spotted. Another Thorn which varies remarkably in colour, adopting all shades of grey, brown and rufous, is found in copses at Boxhill and plentifully in the ranges.

Several species of Emeralds have been taken this year, some certainly undescribed. I have now eleven Victorian species in my collection, ten taken this year. Chlorochroma carenaria is the most prevalent with us.

Agarista latinus still abounds. I took a species new to Victoria and unnamed, but which had been known from Queensland, at Myrtleford.

Mr. Dixon records a specimen of the rare Gastro-phora pernicaria from near the Moe.

The season is the best I have known for Lepidoptera in the colony, owing no doubt to the unusual amount of rain. Many more notes might be added, but I will only say there is now an excellent opportunity for the prosecution of entomological studies.

CORRESPONDENCE.

Western Australian Wasps, &c.—A friend in England having written to me, asking whether a statement made at a meeting of the local Natural History Society is correct or not, viz., that Western Australian Wasps, &c., are stingless, I shall be glad to have any information about them, likewise those of the other colonies. F.G.A.B.

NOTICE.

All communications for the "Victorian Naturalist," should be sent to the Editor, A. H. S. Lucas, M.A., B.Sc., F.G.S., Anderson-street, Albert Park.

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FIELD NATURALISTS' CLUB OF VICTORIA.

ROYAL SOCIETY'S HALL.

The February meeting of this club was held on Monday, 11th Feb., and was presided over by Mr. Watts, one of the vice-presidents. There was a large attendance of members. Two new members, viz., Messrs. Clarence Hicks and P. Cecchi were elected, and several names were submitted for membership. A letter was read from the Dandenong Horticultural Society, thanking the club for the valuable assistance rendered by it to the Society's first Spring Show.

Mr. F. G. A. Barnard read "Some Notes of a Trip to Dandenong Ranges," in which he described the principal Plants and Insects he met with whilst collecting there in November. Dr. T. P. Lucas concluded his "Experiences of an Old Net," and in doing so, mentioned that during the last five years he had collected nearly 1000 species of Lepidoptera. A description of the Ranunculaceæ of the Grampians, by Mr. D. Sullivan, of Moyston, was also read. Mr. Sullivan has been a frequent contributor to the Club, both of papers and specimens, and in the present instance he also made a donation of the specimens, so that the club's herbarium, so far at least as the botany of the Grampians is concerned, is becoming a valuable one. The exhibits were numerous and good. Dr. Ralph showed under the microscope the chemical action of ammonium molybdate on vegetable cells, and his remarks as to the cause of this action gave rise to considerable discussion. Dr. T. P. Lucas showed six species of eggs of Victorian Cuckoos, two of them being hitherto undescribed; A Coles, a lizard and ten young ones taken from it, ovary with twelve eggs from Platypus, and also the mammary glands of a Platypus; H. Watts, odontophores of mollusca from shores of Hobson's Bay; Colonel T. B. Hutton, coleoptera collected from some carrot flowers in his garden at Dandenong; C. French, a new Buprestis beetle, Sternocera Boucardi from mountains of West Africa; P. Dattari, diagram showing the development of second section of coleoptera; J. F. Bailey, three new species of land shells of the genus Helix from Dandenong district; J. H. Gatliff, three shells, viz., Myadora brevis, from Sandridge, M. striata from New Zealand, and Chamostrea albida, from Flinders; A. O. Sayce, Fossil leaf impressions from the Mesozoic coal measures near Hobart; T. A. F Leith, Chinese or King Quail (Coturnix regius), and pair of Java finches, white variety

(Amaderia Javanicus); Masters G. and H. Hill, Lepidoptera recently collected at Windsor; G. Coghill, coleoptera from Plenty River; F. G. A. Barnard, hymenoptera and coleoptera, including Schizorheria Phillipsi, recently collected from off the prickly flowering box now in flower (Bursaria spinosa); and J. E. Prince, Mantis religiosa or praying Mantis.

After a pleasant conversazione, during which it was mentioned that the list of subscribers to the club's new journal, "The Victorian Naturalist," was rapidly increasing, the meeting separated.

ON SOME RECENT MICROSCOPICAL WORK ON VEGETAL TISSUES.

By the Editor.

An impetus has been given to the more careful study of vegetal tissues by Mr. Walter Gardiner's paper, published last year. He accounts for the unity of life in the cells of the same plant by maintaining that the protoplasm is actually continuous from cell to cell through minute apertures in the cellulose walls. He says that by the use of certain reagents he was able to make out the continuity clearly in the cushions of Mimosa and other sensitive plants. His observations have been questioned, notably on the other side of the Atlantic. The question is still an open one, and attracting much attention in England at the present time. An honoured member of the F. N. C.—Dr. Ralph, the President of the Microscopical Society—following up Mr. Gardiner's experiments, has arrived at some curious results, of which we propose to give a short account.

In a paper read before the Royal Society of Victoria in May, Dr. Ralph announced his discovery of Bacteria in living cells of Vallisneria and Anacharis. The plants were healthy, and the only exceptional circumstances to which they were exposed, seemed to be a high temperature, 100°F. at times, and the flood of light on all sides through the glass vessel in which they were grown. That these were not the cause of the presence of the Bacteria may be surmised from Dr. Ralph's more recent detection of these organisms in Camellia, Vinca major, Arum æthiopicum and Erythrina. The Bacteria were in all cases

Bacilli. These forms of life—whether animal or vegetal as yet undeterminable—had previously only been detected in animal fluids, decaying vegetals, and as the governing influence in the various fermentations and zymotic diseases. Their presence in plant tissues adds another interesting bond of union between the two kingdoms.

Vegetable physiology has gained as much from the adoption of micro-chemical methods as it had previously from the use of high powers of the microscope. Double or multiple staining has attained a high degree of perfection, but as Dr. Ralph points out this is not a chemical re-action at all, and is usually a mere staining of the cell walls of particular tissues, and not of their protoplasmic contents. In search of re-agents which should produce a direct chemical effect, evidenced by change or production of colour, Dr. Ralph has found one which is remarkably active, neutral molybdate of ammonia. In a paper read before the Victorian Microscopical Society in January last, he gave an account of its action on 120 genera of plants. He carefully prepares the solution of the salt by adding excess of ammonia to the molybdic acid, and getting rid of the excess by evaporation. In placing a drop of this liquid on the slide, and drawing it under the cover, tissues of certain plants mounted in water immediately show the cell contents tinted with various shades of orange, from palest yellow to deepest red orange. But all plants are by no means alike in their reception of the re-agents, nor are all tissues in the same plant. Dr. Ralph has classified his plants according to the readiness with which they are acted upon, some giving a decided re-action, others a partial or moderate, and a third group no re-action at all. Among the last appear to be most of the Monocotyledons experimented on, but Hedychium and the Banana fruit gave most marked results, some of the constricted vessels of the latter taking an almost startling blood-red hue. The members of Myrtacee and Proteaceæ examined, all gave positive results. Of 120 genera, 30 were unaffected, 62 gave a full, and the remainder a partial re-action. Dr. Ralph is hopeful that with more extended experiments, ordinal or generic characters may be recognised. He suggests the trial of the re-agent in demonstration of pollen-tubes in style-tissues, and of the hyphæ of endophytal and epiphytal microfungi.

We hope, as is also the wish of Dr. Ralph, that others will experiment on this subject. A careful examination of the action on separate tissues, such as the air-containing cells of an epidermis or of the pith of rushes, the chlorophyll-cells of Marchantia, or any other green cellular plant, &c., will lead to definite and perhaps valuable conclusions.

Catalogue of the Fauna of Victoria.

VERTEBRATA: Mammalia.

By T. A. Forbes-Leith and A. H. Lucas.

Authorities—Waterhouse, "Natural History of Mammalia," Vol. I.: Gould, "Monograph of Australian Mammalia; M'Coy, "Prodromus of Zoology of Victoria; Museum of Natural History, Melbourne.

—o—

Order—Monotremata.

Genus.	Species.	Common Name.
Ornithorhyncus, Blumenbach.	anatinus, Shaw.	Duck-mole.
Echidna, Cuvier.	Hystrix, Cuv.	Porcupine Ant-Eater.

Order—Marsupialia.

Family—Macropodidæ, Owen.

Macropus, Shaw.	major, Shaw.	Grey or Old-Man Kangaroo.
M.	fuliginosus, Desm.	Sooty ,,
M. (Onychogale, Gray.)	frænatus, Gould.	Bridled ,,
M. Lagorchestes, Gould.)	leporoides, Gould.	Hare ,,
M. (Osphranter, Gould.)	rufus, Desmarest.	Red ,,
M. (Halmaturus, F. Cuv.)	ruficollis, Desm.	Red-necked Wallaby.
M. ,,	ualabatus, L. et G.	Brush-tailed Wallaby.
M. ,,	brachyurus, Q. et G.	Short-tailed Wallaby.
M. ,,	Thetidis, F. Cuv. and Geoff.	Paddy-Melon.
M. (Petrogale, Gray.)	penicillatus, Gray.	Brush-tailed Rock Wallaby.
Hypsiprymnus, Illiger.	rufescens Gray.	Rufous Jerboa Kangaroo.
H. (Bettongia. Gray.)	penicillatus, Gray.	Jerboa ,,

Genus.	Species.	Common Name
H. (Bettongia, Gray)	cuniculus, Ogilby.	Kangaroo Rat.
H. „	Grayi, Gould.	Gray's Bettong.
Family—Phascolomyidæ, Owen.		
Phascolomys, Geoff.	platyrhinus, Owen.	Black or Grey Wombat.
Family—Phalangistidæ, Waterhouse.		
Phascolarctus, De Blainv.	cinereus, Goldfuss.	Native Bear, Koala.
Phalangista, Storr.	vulpina, Shaw.	Common "Opossum."
Ph.	canina, Ogilby.	Short-eared „
Ph.	viverrina, Ogilby.	Ring-tailed „
Ph. (Dromicia, Gray.)	gliriformis, Bell.	Dormouse Phalanger.
Petaurus, Shaw.		
P. (Petaurista, Desm.)	Taguanoides, Desm.	Great Flying Phalanger.
P. (Belideus, Waterh.)	australis, Shaw.	Long-tailed „
P. „	breviceps, Waterh.	Short-headed „
P. „	notatus, Peters	
P. (Acrobates, Desm.)	pygmæus, Shaw.	Opossum-Mouse.
Family—Perameliдæ, Waterhouse.		
Perameles, Geoff.	obesula, Shaw.	Short-nosed Bandicoot.
P.	nasuta, Geoff.	Long-nosed „
P.	gunnii, Gray.	Gunn's „
P.	fasciata, Gray.	White-banded „
P. (Macrotis, Reid.)	lagotis, Reid.	Native Rabbit.
Chæropus, Ogilby.	castanotis, Gray.	Chestnut-eared Chæropus
Family—Dasyuridæ, Waterhouse.		
Phascogale, Temminck.	penicillata, Shaw.	Brush-tailed Phascogale.
Ph.	lanigera.	Woolly „
Ph.	calura, Gould.	Handsome-tailed „
Ph (Antechinus, Macleay.)	flavipes, Waterh.	Yellow-footed „
Ph. „	albipes, Waterh.	White-footed „
Ph. „	Swainsoni, Waterh.	Swainson's „
Ph „	leucopus, Gray.	White-faced „

Genus.	Species.	Common Name
Dasyurus, Geoff.	Geoffroyi, Gould.	Geoffroy's Dasyurus.
D.	viverrinus, Shaw.	Native Cat.
D.	maculatus, Shaw.	Tiger Cat.
	Order—Cetacea.	
	Family—Balænidæ, Gray.	
Physalus, Lacépède.	Grayi, M'Coy.	Australian Whalebone Whale.
	Family—Delphindæ, Gray.	
Delphinus, L.	Novæ Zealandiæ, Quoy et G.	Yellow-sided Dolphin.
Phocæna.	australis, Cuv.	Porpoise.
	Order—Carnivora.	
	Family—Canidæ, Waterh.	
Canis, L.	Dingo, Blum.	Wild Dog.
	Family—Phocidæ, Gray.	
Stenorhyncus, F. Cuv.	Leptonyx, De Blainv.	Sea Leopard.
Euotaria, Gray.	cinerea, Peron.	Fur Seal, or Sea Bear.
	Order—Rodentia.	
	Family—Muridæ, Gray.	
Mus, L.	Novæ Hollandiæ, Waterh.	
M.	fuscipes, Waterh.	Dusky-footed Water Rat.
Hapalotis, Lichtenstein.	Mitchelli, Ogilby sp.	Mitchell's Hapalotis.
H.	albipes, Licht.	White-footed ,,
H.	conditor, Gould.	Building ,,
Hydromys, Geoff.	chrysogaster, Geoff.	Golden-bellied Beaver Rat.
	Order—Cheiroptera.	
	Div.—Frugivora.	
Pteropus, Brisson,	poliocephalus, Temm.	Grey-headed Flying Fox.
	Div.—Insectivora.	
Molossus, Geoff.	australis, Gray.	Australian Molossus.

NOTES.

Among the many excellent recommendations of the Conference of Inspectors of State Schools held this month in Melbourne, we notice that object lessons are proposed by way of training Victorian children to habits of accurate observation. It is to be hoped that the suggestion will be accepted by the Government, and that the eyes thus opened will be used for the furtherance of natural science in the colony.

We are very pleased to announce that Mr. Charles French, one of the founders of the F.N.C., and one of our most active practical botanists, has been appointed second assistant to Baron von Mueller, the Government botanist. Mr. French will doubtless do good work in this congenial sphere. He enters on his new duties on March 1st.

Botany.—Ferns.—It may be interesting to collectors to know that the following ferns may be found at the Deep Creek about four miles beyond Doncaster Tower :—Dicksonia antarctica, Alsophila australis, Lomaria discolor, L. capensis, Doodia caudata, Asplenium flabellifolium, Davallia dubia, Adiantum æthiopicum, Cheilanthes tenuifolia, Pteris falcata, P. aquilina.—F.G.A.B.

CORRESPONDENCE.

Postal Microscopical Society.

(To the Editor of the "Victorian Naturalist.")

Sir,—With reference to the report of last month's proceedings of our F. N. Club in the daily papers, will you please inform your readers, that it is intended to exchange objects for examination with the microscopists of Sydney and Adelaide, promises of active suppport from the two cities being promised. The box exhibited was from the Micro-section of the Royal Society of New South Wales, and when this box had been examined by the several workers in Melbourne will be forwarded to Adelaide.

With reference to the objects in the Sydney box, one was a specimen of Marine Bryozoa, which I thought was something new, but not thinking myself quite certain on the subject, sent it to Dr. Macgillivray of Sandhurst, who says that : "It is a species of Flustra, which I had not previously seen, and which is probblya undescribed. There seems to be a layer of cells on both sides (the difference between Flustra and Carbasea), and it is a pity that it was mounted on a dark ground, so as to prevent a view of both sides." Here then is a sample of notes expected from workers. This species of Flustra has been mounted for years, and probably would have

remained unknown, but for this opportunity of exhibiting it to Dr. Macgillivray. Any micro-worker is welcome to examine the objects on sending his name to me, when the terms of his joining the scheme may be ascertained.

I remain,
Yours, etc.,

No. 20, Wellington-street, HENRY WATTS.
Colingwood, February 4, 1884.

P.S.—With your permission I shall be happy to furnish you with any notes on this exchange from month to month.

VICTORIAN CUCKOOS. Oology, by Dr. T. P. Lucas.

We have six species of Victorian Cuckoos.

Cuculus inornatus, Vig. and Hors., pallidus ; Pallid Cuckoo. Egg described.

Cuculus (Cacomantus) flabelliformis, Lath ; Fan-tailed Cuckoo. This species had been shot occasionally near Melbourne, but its egg had not been obtained. I have been fortunate this year and last year to obtain a specimen from Nunawading ; also, one taken near Oakleigh in an Acanthiza's nest. They agree with the description given by Gould.

Cuculus (Cacomantis) insperatus, Gould ; Brush Cuckoo. I received the skin of this rare cuckoo from near Wodonga, and eggs from the Murray district. It is of the usual Cuckoo shape, 11 lines long by 8 lines broad, creamy white, with minute dots of slatey grey, thicker at the larger end, and with a number of purplish grey blotches or smears, forming a zone round the larger end. One nest sent down contained apparently one blue wren's egg, one brush cuckoo's, and one bronze cuckoo's.

Cuculus (Calcites) osculaus, Gould sp. ; Black-eared Cuckoo. This bird has been shot near Melbourne, also at Sandhurst. Last New Year's Day, in company with my brother, Mr. A. Lucas, I found a nest of the white shafted flycatcher, near Box Hill, there were two eggs in and a third, almost identical in description with two I had previously obtained, taken from robins' nests. I saw a bird which I did not know running up and flitting among the slight shrubs, and which, on comparing notes with the Museum specimen was the B. Eared Cuckoo. There can then be little doubt that the egg belongs to this species—eggs rounded, one specimen oblong ovate, ground colour dirty white, thinly spotted with dark slatey grey spots, excepting round the largest circumference, where ashey brown, slatey grey and purplish grey blotches form a conspicuous irregular zone, the purplish grey appears as if beneath the surface of the shell.

Cuculus (Lamprococcyx) Plagosus, Lath ; Bronze Cuckoo, described.

Cuculus (Lamprococcyx) Basalis, Horsf ; Narrow Billed Bronze Cuckoo, described.

EXCHANGES.

—o—

A small collection of New Zealand shells offered for Australian Cryptogams other than Filices (to be fully named, mounted or unmounted), or for copies of S.S. Record from the commencement to December 1882.—F. H. Reader, F.S. Dispensary, Smith-street, Fitzroy.

A few British fossils offered in exchange for Victorian —A. H. S. Lucas, Anderson-street, Albert Park.

Mr. H. Watts will be glad to exchange specimens of Fresh-water Algæ or Desmids with collectors in any of the Australian colonies. If possible, the Algæ should be in fructification. No. 20, Wellington Street, Collingwood.

Mr. C. French would be glad to give Australian or Foreign Insects in exchange for specimens of Australian Economic Insects and their larvæ. Botanic Gardens, Melbourne.

Field Naturalists' Club of Victoria.

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The Author of each article is responsible for the facts and opinions he records.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The March monthly meeting of this Club was held at the Royal Society's Hall, on Monday evening, 10th inst, there being the customary good attendance of members, and Mr. T. A. Forbes-Leith, one of the Vice-Presidents, presided.

Four new members were elected, viz., Messrs. A. K. Thompson, A. W. Cole, Junr., T. J. Hughes, Junr., and Colonel T. B. Hutton.

In reply to a letter received from Dr. L. L Smith, inviting the co-operation of the Club at the Intercolonial Exhibition, to open on 17th inst., it was announced that several members were sending in exhibits.

The papers read, were—Part 3 of "Orchids of Victoria and their Habitats," by C. French, describing the following species, Thelymitra carnea, T. flexuosa, T. McKibboni, Diuris pedunculata, D. aurea, D maculata, D. palustris and D longifolia; a description, accompanied by specimens, of some fresh water algæ collected at Berwick in November last, by Mr. H. Watts; and an interesting description of the sound organs of the common green Cicada, more familiarly known as the green or singing Locust, by Mr. A. H. S. Lucas, who exhibited the different portions of the insect, and explained the method by which the singing noise was produced.

The general exhibits were numerous, and comprised Embryoes of a viviparous ray, Urolophus testaceus, by A. H. S. Lucas, who found them, for the first time in Victoria, on the beach recently at South Melbourne; a rare, if not new species of Fungus of the genus Tulostema, from Sorrento, by Miss F. M. Campbell; two large star fish, from Honolulu, Mason spider and nest, and Tarantula spider, from California, also a number of young living black snakes, and photographs of some of the animals in the Zoological Gardens, by D. LeSouef; Orchids, in illustration of his paper, by C. French; Marine Shells, Philine Angasi, with gizzard plates and animal in spirits, Sigaretus zonalis, with animal in glycerine, S. australis, and S. haliotoides, from West Indies, by J. H. Gatliff; Two Marine Shells, Pyrula perversa, from Ceylon and Concholepas, Peruvianus, from Peru, by T. Worcester; Coleoptera, Lepidoptera of the month, by C. French, Jun., and F. Spry; Coleoptera Lepidoptera, and Hymenoptera for February, also Fasciola hepatica or sheep fluke, by J. E. Dixon; a large number of fruit and leaf impressions from the fresh water tertiary formation near Hobart, by O. A. Sayce; Native Tomahawk, found five feet underground at the Kœlong tin mine, Upper Murray, by T. Cornwall; a splendid specimen of the White Goshawk, Astur Novæ Hollandiæe, by A. Coles, and Cerulean Warbler, Dendroica cærulea, Black and Yellow Warbler, D. maculosa, and Song Sparrow, Melospeya melodia, by T. A. Forbes-Leith.

After a pleasant conversazione the meeting terminated.

THE INTERCOLONIAL EXHIBITION.

Exhibits by the Members of the Field Club.

As has been pointed out in one of the daily prints, the Annual Conversazione of the Club is practically being now held on a magnificient scale in the Exhibition Building. Four members have each had an entire Court allotted to them, and have succeeded in making their Courts amongst the most attractive in the Exhibition, while several others are represented by effective, if smaller contributions.

Baron von Mueller has a goodly display of native woods, the grain and colour of which are shown in a novel manner in a large number of specimens prepared as mock volumes, and neatly arranged in a book-case. Their suitability for cabinet work is shown in a multitude of fantastic forms obtained by the turner's skill. A large collection of Edible Australian Fungi, and a charming album of European Fodder Grasses, show also how practically our great scientific botanist can consider the needs of the colony.

One of the Vice-Presidents, Mr. T. A. Forbes-Leith, devotes his space chiefly to Birds and Eggs. Although his unique case of Victorian Parrots is yet on its way from Amsterdam, he has a good series to exhibit. A case of Australian nests and eggs, one of eggs of parrots and another of those of sea-birds, illustrate indification and oology. Of birds he shows the falcons, the bower-birds, and the bee-eaters of Australia, and the parrakeets of New Zealand.

Mr. J. F. Bailey's collections of shells are exhibited in a manner worthy of their numbers and beauty. His cases of gorgeous tropical shells, mostly named specimens, which he has collected in the Indian and Pacific Oceans, are of great value as illustrating geographical distribution. His series of Victorian univalves and bivalves is probably by far the most complete in the world.

Dr. Lucas shows 14 cases of Australian Birds' Eggs, with from 300-400 species. The Eagles' and Hawks' eggs, as usual, are most attractive. The collection is a strong one in parrots, honey-eaters, cuckoos, and wading-birds eggs. He also has 31 cases of Lepidoptera: 4 contain large butterflies, from the Duke of York I. and New Britain, and the remainder, above 1000 Australian species.

Mr. C. French shows a large case of gigantic Beetles and Lepidoptera. Mr. J. E. Dixon, a number of Victorian Coleoptera. Mr. A. J. Campbell, a case containing 100 species of Australasian eggs, including the Tasmanian Swamp Quail, White-footed Heron, and Superb Warbler. Mr. A. Cole, a number of stuffed specimens of native quadrupeds and birds.

NOTES OF A DAY'S OUTING ON THE DANDENONG RANGES.

By F. G. A. Barnard.

(Read February 11th, 1884.—Abstract.)

This was an account of "a Holiday on Cup day spent on Mount Corranwarrabul, rather than on the hill at Flemington." At Warrandyte Station fine specimens of Patersonia glauca were noted, with perianth an inch in diameter. These could not be found in the evening, as the flowers had closed, and the long glaucous leaves were indistinguishable among the grass. In the low country before the rise, several orchids were gathered, Thelymitra aristata and T. ixioides, and Diuris longifolia. Feeding on the flowers of Leptospermum myrsinoides were many species of Buprestidæ and Cleridæ, also a fine Elater—Chrosis trisulcata. Higher up Caladenia carnea was detected, first by its odour, also Thelymitra carnea, and the pretty little fern Cheilanthes tenuifolia. On the summit were well-grown Dicksonias, Alsophilas, and Lomarias, with splendid Musk-trees (Olearia). The altitude is about 2450 feet, and messages are sent hence by Mr. Singleton, from his country house by heliograph to his residence at Malvern. Descending a fine fern-gully with Eucalypts 200 and 250 feet high the flat country was reached again. Here Stigmodera maculata and the hill butterfly Hipparchia abroma were added to the captures. Crossing some scrub, gay with flowers of Tetratheca, Comespermum, and Leguminosæ, Warrandyte station was reached after a ramble in all of ten to twelve miles.

ON THE VICTORIAN RANUNCULACEÆ.

By D. Sullivan.

(Read February 11th, 1884.—Abstract.)

The Author gave a general description of the characters of the order. Of the vast number of species belonging to it, Victoria only boasts thirteen, belonging to the four genera Clematis, Ranunculus, Myosurus, and Caltha. Our common Buttercup, (Ranunculus lappaceus), is "one of the earliest harbingers of Spring, unfolding its bright yellow, glossy flowers by way of contrast to the pure white ones of the little native snowdrop, (Anguillaria), and the equally attractive sundew, (Drosera Whittakerii), as early as the beginning of August. The early flowering variety generally grows on poor, gravelly or sandy soils, while the tall, more robust, and hirsute plant, which blooms for many months of the year, prefers the lower and richer pasture lands."

The water Buttercup, (R. aquatilis), has petals white towards the summit, and as they fall off early, it is difficult to secure good

flowering specimens. No other Victorian Ranunculus has the leaves so much divided, the segments being as fine as silk threads. The plant is submerged.

The rivulet Buttercup, (R. rivularis), has coarser divisions of the leaves and yellow flowers. It is of frequent occurrence on wet, sedgy, especially clayey flats, on the margins of streams and lakes, and the beds of sluggish streams, such as the Wimmera.

R. hirtus may be confused with R. lappaceus, but differs in its reflexed and not appressed sepals. It is much rarer. R. parviflorus varies greatly according to the soil in which it grows : the fruitlets are rough.

" In order to see the other four Victorian species in their native haunts, the reader must accompany me in imagination to the Australian Alps. At an elevation of 6,600 feet on Mount Kosciusko, (N.S.W.), large patches of the charming R. anemoneus abound, the whiteness of its flowers vying in purity of tint with the broad sheets of snow lying on the adjacent slopes of the mountain. It is the white flowers and large stem leaves of this queen of Victorian Ranunculi which give to the plant its anemone-like aspect.

Ascending still higher, (7,000 feet), we notice two other species resembling each other in habit and general appearance. One, R. Gunnianus, has repeatedly divided radical leaves, five or more petals tinged with a purplish hue on the outside, and yellow on the upper surface, and with three gland-grooves which have no scales. Its smooth carpels terminate in almost straight style. The other, R. Muelleri, differs in its entire or few-toothed leaves and yellow flowers. Both flourish, side by side, on grassy depressions, irrigated by melting snow.

Still higher, (7,400), on a gentle grassy slope, at the foot of an immense mass of half-frozen snow, we observe numerous, mostly rectangular spaces, which present the appearance of having been dug out with considerable regularity to a depth of 9 and 12 inches. In these depressions, which are almost destitute of any other vegetation, we find the little white-flowered R. Millani. The whole plant, root, leaves and flower does not exceed one inch and a quarter in height. The short peduncle is soft, hairy, and bears a solitary white flower, with five-ten petals, having one gland-groove without a scale. The leaves have a few narrow segments. Mr. Angus McMillan, the discoverer of Gippsland, deserved to have his name identified with one of our Alpine plants, for he must have had rough times while crossing these apparently limitless mountain ranges. But how will future generations recognise his Scotch origin in the word Millani ?

Another hundred feet and we are at the summit of the huge glacier, (if I am permitted to use the term for a stationary mass of snow.) Here, in the bed of a tiny brooklet, we find several patches of tufted small plants with glossy leaves and snow-white flowers.

This, on examination, we identify as Caltha introloba, the only representative of the genus in the colony. It has no petals in the strict sense of the term, the five-eight sepals forming what we generally regard as the flowers. The leaves of this interesting little plant are very peculiar. They are three-lobed ; the two lower divisions turned inwards and upwards, grow erect in front of the larger lobe. In full bloom, the flowers, pure as the white snow, are extremely attractive, especially when it is considered that no other flowering plant is to be seen on this particular aspect of the mountain, at the elevation now attained."

" On subsaline flats, among other small weeds will be found a little plant with grass-like leaves, minute flowers, and a long tapering fruit. This is the little mouse-tail, Myosurus minimus. It has a wide range on the basaltic plains of the Hopkins, the subsaline flats on the outskirts of the Grampians and Pyrenees, and along the course of most of the streams in the Wimmera district."

The author concluded his paper by describing the two Victorian species of Clematis, C. microphylla, abundant near the sea-coast, with its " beautiful festoons of creamy white flowers hanging from bushes and the lower branches of small trees, and C. ariotata, of the forest country, with large white flowers and leaves which burn the tongue."

ON A SPECIES OF FRESH-WATER ALGA FROM NEAR BERWICK.

By H. Watts.

(Read March 10th, 1884.—Abstract.)

The specimens were found in the Kardinia Creek, three miles from Berwick, in November, and had been cultivated by Mr. Watts until they produced oospores in March. At the time of collecting, the water was flowing slowly, ard was clear, and free from the green masses of Algæ usual in the waters near Melbourne. The Algæ was an Oedogonium, and Mr. Watts considers it Oe tenellum. It is much smaller than Oe capillare, which he has found in Fitzroy Gardens, or Oe vestitatum, in a stream at Little Brighton. The oospores were quite globose, and of a bright orange colour. Mr. Watts exhibited under the microscope the Oedogonium in fructification, and also the following Algæ collected on the same occasion, viz.:— Micrasterias crenata, Pleurotenium clavatum, Closterium Leiblinii, C. turgidum, Desmidium quadrangulatum and Zygnema porticallis.

THE ORCHIDEÆ OF VICTORIA.

By C. French.

(Second Paper.)

In the whole globe there is scarcely a region where a flower will grow at all, but an Orchid of some kind may be found. We do not

mean to assert that they are to be found in equal abundance in all districts ; far from it. We merely state that one of the circumstances which lends interest to the Orchid family, is its cosmopolitanism. To advanced botanists of a speculative turn of mind, it is, of course, a matter of great interest to account for this fact, and to ascertain whether the Orchids of these varied forms in which we see them were originally formed as and where we now see them, or whether they were formed differently in the beginning and in a few places only, whence, in course of ages, they have spread over the globe, becoming changed by force of circumstances, till that wonderful variety we now see has been attained. I should here like to remove a very erroneous impression, viz., that our Native Orchids are difficult of cultivation, and that the tubers will not last, or flower more than the one season. This idea, which I have frequently heard expressed, is a most mistaken one, as with a little care and attention as to water, resting the tubers, &c., they may be cultivated very successfully, and flower year after year. I believe that Mr. Kulpa, late of the University Gardens, was the first to exhibit these pretty plants in pots. In the invaluable work of Bentham and Mueller, (the Flora Australiensis), which has been my principal guide on this as on other occasions, it is stated that this order is one of the most natural and sharply defined, as well as the most numerous amongst Monocotyledons, after Gramineæ, and abundantly distributed over the whole globe, save only in some Alpine or extreme Arctic or Antarctic regions. The forty-eight Australian genera may be geographically divided into two groups, twenty-eight genera comprising one-third of the total number of species, including the whole of the tribes Malaxideæ, Vandeeæ, Bletideæ, Arethuseæ, the first group of Neottideæ and the Ophrydieæ belong to the tropical Asiatic flora, represented in Australia by endemic or frequently identical species. These are all Tropical or Eastern, some extending down to Tasmania, but none found in Western Australia. Five of the genera are also in New Zealand, specimens of which I will show you as I proceed with the reading of the paper. The remaining twenty genera, comprising two-third of the species, are essentially Australian, belonging to three Australian groups of Neottideæ. I may say that the above remarks may be capable of some alteration, as the geographical range of many species is extended, and Bentham again remarks, "As to species I have had for examination, especially in the very rich Herbarium, kindly placed at my my disposal by F. Von Mueller, a far greater mass of excellent material than any of my predecessors, showing for instance how great is the range of variations exhibited in the precise form, markings and processes of the labellun in many of the common Terrestrial Orchids. I have therefore felt obliged very much to reduce the number of published species of Thelymitra, Diuris, Prasophyllum, Microtis and Caladenia. I must, however, admit that the circumscription of several of these species is still far

from satisfactory, the forms can often scarcely be ascertained accurately from dried specimens, and colours very rarely." I have thought it better to use this information from the above work, as it may not be easily accessible to all of you, and it bears out the wisdom of Baron Von Mueller, who is using his best endeavours to simplify matters by reducing largely the number of published species in Orchids, as well as in other orders of plants, and for which you will agree with me he deserves our thanks. I cannot allow this opportunity to pass without referring to the splendid work on the Orchids of Australia published by Mr. Fitzgerald, of Sydney, the coloured illustrations and letter-press of which are a credit alike to the author and to the colony. I have, as you will see, dispensed with the common names of the Orchids, you would make little or nothing out of them, and they are often misleading, because, go where you will, each township, at least as far as my experience goes, has its own local names, all of which are more or less ridiculous. I have attempted little in the way of scientific description, as these are obtainable from the Flora, the Census, (just published by Baron Von Mueller), and other works on Australian Botany. The abbreviated descriptions are taken verbatim from the Flora Australiansis. In concluding these introductory remarks, I may mention that so far as we are aware, there are at present described from Victoria twenty-two genera and about seventy-three species. This will include the various species recently discovered as being new for Victoria, the names and descriptions of which are published in the "Census," and in the Records of the Pharmaceutical Society and S.S. Record. I have adopted the system given by Benthan and Mueller, and in the Census, viz. :—commencing with the genus Dendrobium, and ending with Glossodia.

Malaxeae. Epiphytes.

DENDROBIUM (Swartz.) B. J. 112., S. S. R. Vol. II. 9

Sepals nearly equal in length, petals usually nearly the length of upper sepal or rather longer, column not very long, winged or toothed at the top, anther terminal lid-like, pollen masses 4, Rhizome tufted or creeping on trees and rocks, stems elongated and branching, or simple and thick, and usually bearing both leaves and racemes, or one flower peduncules, flowers often rather large and showy, and rarely very small. This splendid genus includes some of the most gorgeous and magnificent kinds of known Orchids, of which our botany can boast but two species.

1.—DENDROBIUM SPECIOSUM (Smith.) Stems thick and fleshy, Epiphy
six inches to one foot in height, leaves few, two to five, flowers numerous, large, pale yellow, labellum shorter than sepals, column white, often spotted with purple. This beautiful and favourite Orchid is known to most of you by its thick fleshy leaves and pseudo-bulbs, and its long racemes of splendid yellow and white flowers. I believe it is very common in many parts of

New South Wales, but it occurs sparingly in Victoria, viz. :— East Gippsland, and country bordering on New South Wales. I have never seen it growing in its native state, but have frequently seen it in cultivation, when its hardy nature and floriferous habits render it a general favourite with plant growers, and lovers of horticulture generally, and will, if well-grown, hold a very respectable place in any exhibition stand of Orchids, however rare or valuable. To grow it well, near Melbourne, it should be under glass, but not kept either close or too dark. It should be fastened on some old stumps, with a little sphaghnum moss lightly fastened with copper wire around its pseudo-bulbs. Care should be taken against excessive drought or moisture, also to giving it a fair share of rest during its dormant season, (early winter months). This species, if well-grown and placed in small pots or vases whilst in bloom, makes an excellent and attractive plant for the decoration of the dinner table. Found in Victoria, at Genoa River, East Gippsland, by F Mueller and others, also in New South Wales and Queensland

2.—Dendrobium striolatum. (Reichenbach.) A curious species found growing on rocks and trees near the sea coast, and on the mountains, the habit as you will see by the specimen exhibited is straggling or trailing. In color, the sepals and petals are white, with dark colored striæ or markings, hence its specific name. This species should be fastened on to sandstone blocks or decayed logs, with the rhizomes nearly uncovered, otherwise it is liable to rot. I have no other guide than the imperfect specimen which you see, to enable me to form any opinion as to its worth for cultural purposes, still, being also a Victorian species, it should certainly be cultivated in any well-kept Victorian collection. Dendrobium Milligani is Synonymous with this species. Found in Victoria, Tasmania, Queensland and New South Wales.

(To be continued.)

10*th September*, 1883.

CORRESPONDENCE.

Western Australian Wasps.

For the information of your correspondent, "F.G.A.B.," I may mention that I have had in my posssession many specimens of Western Australian Hymenoptera, and the wasps I found had most formidable stings, and doubtless when living knew how to use them. I have also made inquiries of a friend who has had practical experience of the virulence of many of them, he having lived and collected in Western Australia for many years. Those from Queensland, New South Wales, and South Australia appear to be quite as formidable, judging from the length of their "tickling" apparatus. C. F.

Field Naturalists' Club of Victoria.

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THE JOURNAL AND MAGAZINE

OF THE

Field Naturalists' Club of Victoria

The Author of each article is responsible for the facts and opinions he records.

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PRICE—SIXPENCE

Emerald Hill:
J. C. MITCHELL, PRINTER, CLARENDON ST.
1884.

FIELD NATURALISTS' CLUB OF VICTORIA.

April Monthly Meeting, Royal Society's Hall, Monday, 21st.

The President, the Hon. Dr. F. S. Dobson, M.L.C., occupied the chair, and there was a large attendance of members.

Several nominations for membership were received, and Mr. J. F. Bailey promised a paper on "Some Land Shells collected by Col. Hutton at Dandenong."

In accordance with the rules of the Club, the nominations were made for office-bearers for the ensuing year, who will be duly balloted for at the next meeting.

Two papers were read, the first being "On the Classification of Eucalyptus," by Rev. Dr. W. Woolls, Ph.D., F.L.S., who described the different methods which had at various times been adopted by botanists, such as by the "Operculum," by the Bark, by the Anthers, and by the Fruit, the last being favoured by our great botanist, Baron F. Von Mueller, and also by the writer. The second paper was a most interesting one on "Snakes," by Mr. D. Le Souef, the well-known Assistant-Director of the Zoological Gardens, and as, from his position, he has had favourable opportunities for observation, he was able to record many particulars of the habits, &c., of these Reptiles.

The Hon. Librarian acknowledged the receipt from the author, Mr. A. J. Campbell, of a copy of his work on "Australian Oology," for which the thanks of the Club were duly accorded him.

The general exhibits were not quite so numerous as on previous occasions. They comprised British Birds, Parus major, (Great Titmouse,) Regulus cristatus, (Golden-crested Wren,) Troglodytes vulgaris, (Common Wren,) Certhia familiaris, (Tree Creeper,) Emberiza Citrinella, (Yellow Hammer,) and Fringilla Cœlebs, (Chaffinch,) by T. A. F. Leith; Shells, Voluta interpunctata from India, Conus Victoriæ, (Queen Victoria's Cone), from Victoria River, N.W. Aust., by J. F. Bailey; Shells of the genus Columbella, 13 sp. from West Head, Western Port, by J. H. Gatliff; recent entomological captures, by F. G. A. Barnard; Mundic-coated crystals from the Ellenborough mine, Sandhurst, by H. Kennon; a finely preserved cast skin of the Tiger snake—Hoplocephalus curtus—

also live spider and nest, by D. Le Souef ; two Orchids in bloom, also specimen of rare beetle, Schizorhina Bakewelli, by G. Coghill ; Fossils from upper Eocene beds, at Headon Hill, Isle of Wight, viz. :—Limnæ afusiformis, L. longiscata, L. caudata, Paludina lenta, Planorbis euomphalus, also Helix globosa from the Bembridge Beds, by A. H. S. Lucas.

After the usual conversazione, during which attention was directed to the annual one to be held in the Royal Society's Hall, on Wednesday, 30th inst., the meeting separated.

NOTES ON VICTORIAN VENOMOUS SNAKES.

By. D. Le Souef.

Assistant Director of the Zoological and Acclimatisation Society's Gardens.

(Read 21st April, 1884.)

Snakes of the same species differ very much in colour, a fact which often causes a good deal of confusion in their classification. This is especially the case with our Tiger snake, some specimens being nearly yellow, while others are dark brown, with their bands hardly discernible. I have seen a dark-red variety of the Copper-headed Snake. This is rare. The Rev. F. Hagenauer, of the Aboriginal Station, Lake Wellington, who sent me the single specimen I have seen, informed me that in the course of twenty years he had only seen two.

Snakes do not charm or fascinate their prey in any way, but approach the object of their attack so imperceptibly as not to create any alarm. I have frequently seen venomous snakes approach within half-an-inch of a sparrow without frightening it, and the only object the bird seemed to take any notice of was the reptile's tongue,

the quivering motion of which seemed to rouse its curiosity, but certainly not its fear. Both rabbits and mice run to and fro over the snakes without showing any sign of fear, and I have seen the latter occasionally make the snakes move out of their way by nibbling at them. Birds, again, if the snake remains quiet for a short time, will frequently perch upon its back, and prune their feathers, &c, and even try to remain on after the snake has commenced to move.

The young snakes are born alive, and not hatched out of eggs. I recently received a brood of young Black Snakes which had been taken out of their mother after her death. They were active and lively, and changed their skin about a fortnight after. Black Snakes which were born in captivity a few days ago, changed their skin the day after birth. Snakes usually change their skin about every four months. They shed the old skin by first pushing their heads against any projecting object to loosen the skin from lips and head, then by still pushing and using their ribs ease it off until the tail is reached. The skin of the tail generally comes off without being reversed, as that of the fore-part usually is. The integument is continued over the eyes, being here transparent until just before the change of skin, when it becomes opaque, so that the reptile is then nearly blind. The shed skin is thus perfect. During the sloughing the snake declines all food, but is correspondingly hungry and vigorous when the process is completed.

Venomous snakes destroy their prey by poison. Some, such as the Copper-headed, when they have caught and bitten an animal, commence swallowing it at once, while yet alive, but the Tiger Snake does not touch its prey after it has bitten it until life is quite extinct. When swallowing, the jaws are moved alternately. This is possible from the freedom of movement which is obtained by all the bones of the head being united by elastic ligaments, so that the head and jaws can stretch considerably. Hence also snakes can swallow prey apparently larger than themselves. Occasionally two snakes will seize upon the same prey, and as neither will give way, the larger swallows the lesser, until the latter is compelled to relax its hold on the prey and withdraw from the contest. I lately heard of a case where a large snake had swallowed a smaller one in the manner described, but the latter had gone too far down to be able to recede, and died, and when the larger snake was opened, it was found to have partially digested its opponent, only the tail remaining uninjured. The Tiger Snakes and Death-adders generally prefer mice and rats. Rats do not succumb readily to the poison, and take a long time to die. Lately I saw a small native cat bitten severely by three large Tiger Snakes, with about five minutes' interval between each bite, and it took an hour and a half to die. The other snakes prefer frogs as an article of diet.

All snakes commence swallowing their prey head first, and seem to use their tongues as a feeler to help them to discover where the head is. The tongue, from its quick quivering motion, has always been one of the most interesting parts of a snake, and I think it is used in this way chiefly as an organ of touch, as you frequently see them feeling the victim over the better to ascertain its position. There is a copious flow of mucus, but the tongue is not employed to cover the prey with this fluid, as has been supposed. During deglutition, the glottis is sometimes seen to protrude a quarter af an inch from the mouth, so that the animal can breathe freely during the operation. The hiss is caused by the action of the expired air on the margin of the glottis.

They will only feed in warm weather, and if it becomes cold or dull during summer, they refuse to eat until the sun resumes its sway. They hibernate during winter in hollow logs, under stones, or in holes made by other animals, as they do not burrow themselves.

When they drink they keep their mouths just below the level of the water, taking up the liquid by suction. They also often dip their tongues in the water, but not to assist in drinking. When the mouth is closed, the tongue protrudes through a small opening in the upper lip at the point of the muzzle, which part is free from teeth, and it is drawn back into a sheath on the floor of the mouth for protection while the snake is feeding.

Snakes shed their teeth, new ones being rapidly produced. There are always a number of immature fangs behind the two in use, and if these are destroyed by any accident, another pair will be fully developed and ready for use in about six days. The point of the fang is extremely fine and solid, the tooth being perforated in its lower three-fourths. The channel is enamelled. The fangs of all our snakes are permanently erect, and when the mouth is closed, fit into a depression in the lower jaw. The jaws do not close on each other, but also fit into depressions.

If frightened during a meal, snakes sometimes disgorge. I once saw a Tiger Snake kill and swallow five mice in succession. Finding that they were more than could be managed, it retained only three. The digestion is good, and probably assisted by the venom injected, as it has been shown recently that it possesses peptic qualities.

It is very difficult to draw conclusions as to the relative power of the venom of different snakes, as so many causes exist which affect the time the poison takes to act. In cold weather the reptiles are nearly dormant; while changing the skin they are sluggish; the poison-glands may be exhausted by previous bites; or the animal

may be in a weak condition from confinement or other causes. A bite from a Tiger snake in full vigour is generally fatal, and the cases of cure recorded are probably due to some one of the above mitigating circumstances. No absolute antidote is known, although there are several so-called. Spirits taken internally, aid the system to throw off the depressing effects of the poison. But the most powerful stimulant in cases of snake bite is the strong solution of ammonia injected into the veins, as suggested first by Professor Halford of the Melbourne University. Its effects in cases of collapse are most marked, but it depends upon the amount and virulence of the venom injected whether the remedy be successful or not. If the wound is scarified and sucked at once, and a tight ligature applied to the limb, a certain amount of the poison may be abstracted, and so less remain to be contended with. But it often happens, spite of all remedies, that the poison acts rapidly and fatally.

Snakes progress chiefly by means of their ribs, which move in wave-like motions. When travelling fast through grass and fern, they shoot onward with rapid "serpentine" motion, forcing themselves along by any solid that may be convenient. When they climb up against glass, &c., they seem to create a vacuum with their ventral scales. They will almost invariably try to escape if anyone approaches, and very seldom attack when unprovoked. The Tiger snake is the most pugnacious of Victorian species. Some snakes, especially the Black Snake, cover the ground at an amazing pace, so that the eye can scarcely follow the movements. The Death-adder is the slowest of all.

Snakes are very fond of water, and have the faculty of remaining beneath the surface for a lengthened time. A gentleman recently told me that when bathing in the Goulburn River, he saw a snake coiled up on the sand, about a foot under water, where he was just about to step, with its head erect and glistening eyes fixed on his foot, which in another instant it would have bitten. They swim gracefully and swiftly, with the head and several inches of the body above water.

Our snakes have their natural foes. A relative of mine told me that he was riding on his run one evening some years ago, when he suddenly saw a laughing jackass swoop down from a large gum tree on to the ground, and in a moment the bird ascended with a snake, apparently between two and three feet in length, in its powerful beak. It flew to a considerable height and then dropped its victim, and reaching the ground nearly as quickly as the snake, immediately seized and took it up again, repeating the same process several times, until the snake was either killed or sufficiently disabled to enable the bird to kill and eat it. Pigs are also great enemies to snakes, and often destroy and eat them.

ON THE CLASSIFICATION OF EUCALYPTUS.

By Rev. Dr. Woolls, Ph.D., F.L.S.

There are some genera of plants in which the species may be grouped without difficulty. They seem to be distinguished by certain characters, and to fall naturally into their proper places. Thus, for instance, in some of the large genera in the Leguminous and Myrtaceous orders, our eminent botanists, Bentham and Mueller, felt no hesitation in reducing the species to their respective stations in a systematic arrangement. One large genus, indeed, that of *Acacia*, (which numbers some 300 species), though, taken as a whole, a most marked one, gave Mr. Bentham much trouble in forming any definite sections, and therefore he regarded his divisions as somewhat provisional, looking forward to a period when the pods of all the species could be procured for comparison and the funicle of the seeds be carefully examined.

With regard to the subdivision of the genus *Eucalyptus*, he candidly acknowledged, that to the botanist who is unable to compare the various forms in a living state, the due limitation and classification of the species present almost insuperable obstacles. In the early days of Australian colonisation, when, in addition to *E. obliqua*, only eleven species were known to European botanists, (those species being noticed in the immediate neighbourhood of Port Jackson), it was considered sufficient to divide them according to the shape and length of the opercula which covered the stamens in the bud. Thus, Hilldenow (1799) has two classes, viz., those with conical, and those with hemispherical opercula. This classification was followed by R. Brown, (1810), to whom about 100 species were partially known, and with further modifications in regard to the shape and length of the operecula, it was adopted by De Candolle, Don, &c. When Baron Mueller some thirty years ago settled in Australia, and had opportunities of examining many species of *Eucalyptus* in a living state, he found that the system of classification hitherto pursued was untenable, seeing that, in some species, the length of the operculum was not uniform, whilst in others the shape was sometimes conical and sometimes hemispherical. This led him to devise what is termed the "cortical system," that is, a grouping of species according to the nature of their respective barks, such, for instance, as "smooth-barked," "half-barked," "fibrous-barked," and "deeply furrowed-barked" trees. To the European botanist, this system, (though extremely natural and of great use to those who have an

opportunity of seeing the trees in a living state), cannot be regarded as satisfactory, because he has no means of testing its usefulness, or of obtaining a correct impression of its character. Moved by these considerations, and also by certain suggestions of Baron Mueller, as to the form of the anthers in the species, Mr. Bentham elaborated an ingenious system for grouping the species according to the shape and openings of the anthers, that is to say, whether they are reniform, globular, or oblong, or whether they open by divergent or parallel slits, or by pores. For a cabinet arrangement, this method of grouping has many advantages, and Baron Mueller has followed it with a certain modification in his systematic census, (1882). The chief objection to this system is that it separates trees closely allied, placing for instance, some Iron-Bark trees in one section, and some in another; whilst it must be admitted, that it is of a character too artificial for general appreciation. When I was writing on this subject some years ago, I remarked, "Some species are marked by the double operculum, some by winged seeds, and others by the colour of the stamens; but the shape, cells, valves, &c., of the seed-vessels present important notes of distinction, and deserve the most attentive study. Hence, I believe that these considerations, when taken in connection with the cortical group to which the respective species belong, will be found most efficacious in settling many difficulties. (Cont. to Flora of Aus. p. 218, 1867)." I am happy to learn that the distinguished botanist of Victoria entertains similar views, and that he proposes, in connection with his *Eucalyptographia*, to elaborate a system founded on carpologic considerations. If it be true in botany, as it is in religion, that "by their fruits ye shall know them," favourable results may be anticipated from the Baron's labours. My knowledge of Eucalypts is very limited, and I have neither the ability nor the opportunity to follow out such a system as that contemplated by my learned friend, but I feel assured, that, whilst little reliance can be placed on the comparative length of the operculum or the shape of the leaves, the fruit is subject to less variation. In a large genus like that of *Eucalyptus*, containing about 140 species and scattered widely over the continent, there may be some difficulty in obtaining the material necessary for accomplishing the object in view; but judging from the figures of fruits already published in the *Eucalyptographia*, it may be hoped that a work progressing so auspiciously, will be carried on to its completion.

In conclusion, I may remark that this question respecting the systematic arrangement of Eucalypts, is one which concerns the whole of Australia, and that, though the Baron is supposed by unthinking persons to be writing from a Victorian standpoint, he is in reality, as the greatest of Australian botanists, advancing the interests of science in all the colonies.

NOTES.

At a meeting of the Field Naturalists' Section of the Royal Society of South Australia, held March 22nd, Professor Tate presiding, Mr. D. Best, the Hon. Sec. F.N.C., and Mr. H. Watts, Vice-President F.N.C., and Hon. Sec. of the Postal Microscopical Society of Victoria, were elected honorary members.

Mr. A. J. Campbell, F.N.C., has brought out a volume on the "Nests and Eggs of Australian Birds." Descriptions and dimensions are given of about 413, or nearly all the known Australian eggs, 262 being taken from Mr. Gould's celebrated work on the birds of Australia. Of the remainder, Mr. Campbell claims to here describe 122 for the first time, from specimens in his own collection. Prefaced to each of the families, is a general description of the kind of nest made by the members of the family and the number of eggs usually laid. This is a convenient arrangement, especially for beginners, as they can easily determine the family of any bird whose nest only they have found, and then determine the bird itself by comparing the eggs with the concise descriptions which follow the family characters. The descriptive portion of the book will make it, in company with Mr. Ramsay's Tabular List, a valuable *vade-mecum* for practical oologists, who will owe Mr. Campbell a corresponding debt of gratitude. For those who delight in adventure, we had almost said romance, Mr. Campbell has appended a series of pictures of his "camp-outings," in which in very lively language he tells of the sort of sport to be obtained in Australian birds-nesting. It should be added that this publication includes a number of papers read before the Field Naturalists' Club.

CORRESPONDENCE.

Suicide of Snakes.

"In Nature," March 13th, p. 452, Mr. Hardman, Government Geologist of Perth, W. Australia, mentions an instance of the suicide, by its own venom, of a Black Snake. The snake had been wounded, and the wounded part having been attacked by black ants, "it instantly turned short round and bit itself twice on the neck with seeming determination, and in less than one minute it was dead." Mr. Hardman believed the death to be due to its own venom. Can anyone substantiate this view of reptile suicide by similar instances, from his own observation of our native snakes?—A. H. S. L.

EXCHANGES.

Mr. H. Watts will be glad to exchange specimens of Fresh-water Algæ or Desmids with collectors in any of the Australian colonies. If possible, the Algæ should be in fructification. No. 20, Wellington Street, Collingwood.

Mr. C. French would be glad to give Australian or Foreign Insects in exchange for specimens of Australian Economic Insects and their larvæ. Botanic Gardens, Melbourne.

NOTICE.

All communications for the "Victorian Naturalist," should be sent to the Editor, A. H. S. Lucas, M.A., B.Sc., F.G.S., Albert Road, Albert Park.

Field Naturalists' Club of Victoria.

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PRICE—SIXPENCE

Emerald Hill:
J. C. MITCHELL, PRINTER, CLARENDON ST.
1884.

FIELD NATURALISTS' CLUB OF VICTORIA.

FOURTH ANNUAL CONVERSAZIONE.

The Fourth Annual Conversazione of this Club was held at the Royal Society's Hall, on Monday evening, 30th April, and, like its predecessors, was exceedingly well attended by both members and the public, so much so, indeed, that it will be necessary for the Club to consider the desirability of holding the next one in rooms affording more spacious accommodation. This large attendance was certainly well deserved, if only for the excellence of the numerous exhibits, many of which must have cost the exhibitors a great deal of time and patience in the procuring and setting them up, not to mention the constant care required to keep them in the well-preserved condition in which they were shown.

Of the President's address, as it will appear in full in the present number of the Victorian Naturalist, it is not necessary to say more than that it was delivered in the Hon. Dr. Dobson's happiest style. He referred to the past doings of the Club, and to its present flourishing condition, and made suggestions for future work, including the compilation of a botanical Key, similar to one published for the Tasmanian flora, by Rev. W. Spicer, and a recommendation to adopt a suggestion made to him in a letter from Professor F. McCoy, that members should study the numerous insects, parasitic on native and cultivated plants, also the galls on various leaves, and the insects producing them. In concluding he referred, with regret, to the continued indisposition of Baron F. Von Mueller, to whom the Club is under obligations for information always most readily afforded, and who, it was generally hoped, would soon be fully restored to his usual health and energy.

Immediately following the address, Mr. C. A. Topp gave an interesting biography of the Cape weed, so common all over the colony, and known to almost everyone by its yellow flowers, which are in some places so numerous as to give the appearance of forming a yellow carpet. Mr. Topp dates its introduction into the colony at about the year 1840, and, with other particulars, described the adaptation by which its cross fertilisation was secured. (1833?) After an interval devoted to the inspection of the exhibits, the audience again assembled to hear from Mr. A. H. S. Lucas, a short lecturette, entitled "Common Objects of the Seashore." In this, Mr. Lucas described many of the objects he has met with in his rambles on the Victorian coast. He also pointed out that the coasts of this colony present, perhaps, the best field for studying the questions of geographical distribution, and of the variation of species.

Of the exhibits themselves, where all were so good, it is almost invidious to speak of their relative excellence. Perhaps the most interesting of all were the specimens of plants collected by Robert Brown, one of the first of Victorian Naturalists in the Port Phillip district in 1802-4. These relics of the great botanist were shown

by his worthy successor, Baron Von Mueller, and were in a perfect state of preservation. The growing plants, the Victorian ferns shown by W. R. Guilfoyle and F. G. A. Barnard, and the exotic Orchids of J. F. Roberts, formed a new and most pleasing feature. Mr. Bailey's splendid series of fossil fish from the Lebanon Cretaceous, and another, equally fine, from the Old Red Sandstone of Scotland, were admired and examined by nearly everyone. The microscopes of Mr. H. Watts, who devoted the whole evening to their superintendence, afforded visitors an opportunity, largely availed of, of seeing his carefully mounted preparations for illustrating the structure of Insects, his well-stained specimens of the tissues of Australian plants, and a large number of histological slides. We will now give a more detailed list of the exhibits.

Baron von Mueller.—Specimens of Australian Timbers in book patterns ; Specimens of plants collected at Port Phillip, 1802-4, by Robert Brown ; Album of European Fodder grasses, and Coloured Plates of Edible British Fungi.

J. F. Bailey.—Series of 32 Fossil Fishes from the Cretaceous of the Lebanon, including beautifully-preserved specimens of *Spaniodon Blondelii* and *Sp. elongatus*, *Rhinellus furcatus* and *Cyclobates oligodactylus*. Two large slabs were shown full of fine specimens of *Clupea*, &c.

Series of 32 species of Fossil Fish from Old Red Sandstone of Scotland, including *Diplacanthus longispinus*, *Coccosteus oblonga*, *Cheirolepis Cummingii*, *Pterichthys*, &c.

A fine collection of Ammonites from the Lias of England, one slab alone containing about 100 well-defined specimens of *A. Smithii*.

Slab of *Eozoon Canadense*. Collection of 307 specimens of Victorian Shells, made by Mr. Bailey, probably the most complete yet achieved.

All Mr. Bailey's collections can be seen systematically arranged in the Museum of the Trustees of the Exhibition Building.

W. R. Guilfoyle.—Collection of 40 Victorian Ferns in pots.

F. G. A. Barnard.—6 Victorian Ferns, in pots, the most noticeable being *Gleichenia circinata*, and *G. flabellata*.

Also, 6 cases of Insects collected in and around Kew, one case containing typical specimens of the different orders, sections, and families of Insects, and one case each of the orders Coleoptera, Orthoptera, Hemiptera, Neuroptera, and Hymenoptera.

J. F. Roberts.—Magnificent flowering specimens of *Oncidium Papilio*, from Trinidad, *O. Rogersi*, *Odontoglossum grande*, a new *Calanthe* from New Caledonia bearing a tall spike of pure white flowers, *Lælia autumnalis*, and other rare orchids, interspersed with ferns.

H. Watts.—Several series of microscopical objects as above described.

J. E. Prince and O. A. Sayce also showed microscopes.

D. Best.—1 Case of Australian Hymenoptera, 2 Drawers of Victorian Longicorn Beetles, containing 150 species ; 1 Drawer each of Australian Elater, Cetonia, and Carabus ; 1 Drawer of Australian Beetles of various families ; 1 Drawer of Victorian Buprestis, and a glass shade, containing pair of rare species of Kangaroo Rat.

Ornithology was illustrated by T. A. F. Leith, with a Case of Rapacious Birds, viz., Black-cheeked Falcon, White-fronted Falcon, White Goshawk, Collared Sparrow-Hawk, M and F. Owls, &c. ; C. French, with a case of beautiful Humming-Birds ; E. B. Green, Australian and other Birds' Skins ; A. J. Campbell, 100 specimens of Australian Birds' Eggs ; A. Coles, 1 case of Penguins and Waders, 1 case of Parrots and Honey-eaters, and 3 glass shades of Birds ; and A. J. North, 2 glass shades of rare Australian Birds.

Botany by C. A. Topp, Representatives of the principal Natural Orders found in Southern Victoria ; Miss F. M. Campbell, Collection of Australian Fungi ; J. E. Dixon, 8 Books of Victorian Dried Plants, 3 Books of Victorian and N.Z. Dried Ferns, and 2 Books of Victorian Orchids ; J. Stickland, Collection of Marine Algæ ; J. E. Prince, Dried Plants ; A. Thie, Collections of Woods and of Marine Algæ ; P. Dattari, N.Z. Ferns, and beautiful drawings of Australian Ferns, executed by himself ; E. B. Green, Australian Woods.

Entomology was further represented by C. French, Case of Australian Lepidoptera ; G. Coghill, Box of Victorian Coleoptera : C. Hicks, Exotic Beetles ; R. Laing, Cabinet Collection of Australian Beetles of the late D. Kershaw.

T. Worcester showed 6 cases of shells ; J. H. Gatliff, 100 species of the genus Oliva, comprsiing 320 specimens ; O. A. Sayce, a case of Victorian Miocene Fossils.

The Junior members were not wanting on this occasion. C. French, Jun., showed Fossils ; and W. F. H. and G. E. F. Hill, (aged 10 and 8 years,) a case each of Moths and Butterflies, caught or bred by themselves.

The exhibits were under the supervision of Messrs. J. F. Bailey, T. A. F. Leith, and C. French, who displayed good taste in their arrangement, and also afforded information to enquirers concerning them.

The visitors began to disperse at about 10 o'clock, and the Club may fairly be congratulated upon having afforded them an instructive evening's entertainment.

PRESIDENT'S ADDRESS.

By Hon. Dr. F. L. Dobson, M.L.C.

The following is the address delivered by Hon. Dr. Dobson, M.L.C., President of the Field Naturalists' Club, at its annual *conversazione*, on the 30th ult.:—

Ladies and Gentlemen,—We meet to-night upon the occasion of our fourth annual *conversazione*, and the duty devolves upon me to inform you what we have done during the past year, and to make a few remarks as to what it is proposed to do in the year upon which we are now entering. When the club was first formed it was felt to be an experiment which might or might not succeed, but any fears that existed in the early infancy of our club have been happily dissipated, as our rapidly increasing numbers prove that we are regarded as one of the institutions of the country. In a new country such as ours, the inducements to observe nature in all her aspects are greater than in older lands, because in addition to the charm to be derived from the study itself there is here the stimulus of the possibility, I may say the probability, of discovering something not before described. Again, on our excursion the different sections are placed under the leadership of the best man in each that we can find, and his assistance is invaluable to all of us who do not happen to be so well informed. Then the search through a district by several is of course more complete than it could be were only a single individual engaged in it ; and although you may be unable to find the particular specimen you may wish to procure, another more fortunate companion may succeed in finding it *in situ*. Most of us are engaged in occupations which confine us within doors, and the mere ramble in the country for a few hours is as good for the body as it is for the mind of the intelligent observer. Last Queen's Birthday was a very wet day, and the plans laid down for the excursion, which included a long walk, had to be changed ; but even then, during an hour or so of fine weather, Mr. Best was enabled to give those of us who were present a considerable amount of information upon the insects in and around Mordialloc, so that the day was not wholly lost. Other excursions during the year have been more fortunate. Socially, as well as scientifically, such an institution as ours must act beneficially, as it brings into closer and more intimate union those who are already held together by the tie of affection for some scientific pursuit. The circle of the sciences is so complete that hardly one can stand alone, and the man who possesses a good microscope, and knows how to use it, may be said to be a part and parcel of every science. For instance, a good field geologist finds a piece of silicified wood or an impression of a leaf or insect. Here he will have, unless he be a highly accomplished student, to apply for aid to the botanist or the entomologist, and these latter may have in their turn to apply to a microscopist to aid them in identifying the specimens. This illustration could be widely extended, but it is sufficient to explain what I meant to point out, viz., that we are a sort of co-operative association for scientific purposes. Like the bundle of sticks, we are far stronger when united than when we rely upon our individual strength. Our indefatigable secretary, Mr. Best, has kindly

furnished me with the results of the meetings and excursions of the club, and these results will form the main portion of what I have to say. But before saying it I have to tell you, with a regret which will be felt by all, that Mr. Best finds it impossible to give us his services as secretary any longer. Although we have been able to secure a worthy successor in Mr. Barnard, I think we ought not to part with Mr. Best in his capacity of secretary without telling him that we have highly appreciated his services, and thank him for them. Mr. Best tells us that—"During the past year 33 new members have been added, making a total, after allowing for resignations, of about 170 members. The papers read have comprised nearly every branch of natural history. Botany has been well represented by Messrs. W. R. Guilfoyle, director of the Melbourne Botanic Gardens; H. Watts, H. T. Tisdall, C. French, D. Sullivan, and F. G. Barnard. Mr. Guilfoyle has given a pleasant account of a trip to the South Sea Islands, and of the beautiful plants he there saw, especially of the ornamental foliaged kinds, such as crotons, dracænas, palms, &c. Mr. Watts, who is so well known as a collector of algæ, or more commonly known as sea-weeds, and freshwater weeds, has described the results of trips he made to Macedon and Berwick in search of his favourites, of which he found many species, at the first named being fortunate in securing some oscillaria and gomphonema. He has also given the results of a personal microscopical examination of the silt of the River Yarra, in which he found specimens of Cristellaria, Rotalia, and diatomacæ, also one of campylodiscus, this last being only twice previously found near Melbourne—viz., by Dr. Coates, of South Yarra—and then considered a new species; and more recently, when digging the drain for the West Melbourne swamp. Mr Tisdall, whose residence is at Walhalla, has given an account of the flora to be found in his district, and Mr. French, who has so ably described the ferns of the colony, is now doing a like pleasant and useful duty for that beautiful class of plants, the orchids. Mr. D. Sullivan, of Moyston, a frequent contributor to the club, has furnished two additional papers, one being a supplementary list of the plants of his district, amongst them being a new orchid found by him near the summit of Mount Difficult, and named by Baron Von Mueller after the finder Caleya Sullivani, and the second a description of the Ranunculaceæ of the Grampians. Mr. F. G. Barnard has contributed a pleasant little paper entitled "A Collecting Trip to the Dandenong Ranges," in which he describes some of the plants and insects he there met with. Oology has been done ample justice to by Mr. A. J. Campbell, who has completed his description of Australian birds' eggs, and has just published same in a separate volume, which may be considered the most complete extant work on such a subject. Mr. Campbell has also given an account of a collecting trip he made to Tasmania, where he succeeded in securing a specimen of the rare bird Acanthiza major. Entomology has also been well represented

by Mr. T. Harrison, who is well-known as an observer of the habits of ants, bees, and spiders, and who has contributed two papers on his favourite study, and the results of his observations seem to fully confirm the general belief of the great instinct possessed by these interesting little animals. He also contributed an interesting and humorous paper on what he termed "Life on an Old Pile," being a description of the many and varied forms of animal life he had observed on an old pile recently thrown up on the beach. Lepidoptera, or the butterfly family, always receives justice from the hands of Dr. T. P. Lucas, who has, under the title of "Experiences of an Old Net," pleasantly recorded the results of collecting trips to Marysville and Warragul. Some Russian and other beetles, sent by Count Bramston, a Russian entomologist of some note, have been described by Mr. French, who drew attention to the singular fact that two beautiful black and red species of a longicorn beetle of the genus Purpuricenus, from Algeria and Hungary, very closely resemble the one found in New South Wales, West and South Australia, from which, indeed, it is scarcely distinguishable. Conchology has only had one representative, viz., Mr. J. H. Gatliff, who gave an interesting description of the genus Pecten and their peculiar powers of motion, some species, as is well known, being capable of jumping out of large baskets. Mr. A. H. S. Lucas has explained the position of sponges in the animal kingdom; also the sound organs in the green cicada or green locust, so well known to the youth of the colony. Mr. T. A. F. Leith has recounted several anecdotes in connexion with the phocidæ, or seal family, expressing his belief, from personal observation, that music has an undoubted attraction for them, and also that they have great foresight in apprehending danger. Mr. J. F. Bailey has described a new species of gordius, or hair worm, which he received from the St. George River, near Lorne, and over this considerable discussion took place relative to the generation of worms. In the course of it Mr. Watts took occasion to mention that, although there was a general belief that infusoria existed in the Yan Yean, he had, after very careful examination, failed to find any trace of them. The formation of a postal miscroscopical society, similar to one recently established in England, was advocated by Mr. Watts, the object being the transmission through the post from one member to another of specimens for examination, and their ultimate return to a recognised head office. The excursions have been much better attended than during the previous year, and have resulted in not only pleasant outings, but also the discovery of many rare and several new species of plants and insects. The exhibits at the monthly meetings have been exceptionally good. Amongst the many may be specially mentioned seven stages in the life of one of our common months, Ossorhina nana, by J. F. Spry; a fine series of coloured plates showing the development of the dreaded Phylloxera vastatrix, by Dr. L. L. Smith; limestone fossils from Lilydale, by F. G. Barnard; Australian fungi, by

Miss Campbell; rare eggs, by A. J. Campbell; a beautifully preserved specimen of the rare fossil shell, Cyprea contusa, found in the miocene limestone at Cheltenham, also many other shells and fossils, by J. F. Bailey; a fine collection of shells of the genus Pecten, many of them being of beautiful colours, by J. H. Gatliff; rare fossils by J. E. Dixon and O. A. Sayce; a fine specimen of the rare orchid, Caladenia suaveolens, found by D. Best at Berwick, and being, according to Baron von Mueller, the second instance of its being found in the colony. It would take up too much of your time for me to enumerate even one-half of the exhibits, and this must be my excuse for not mentioning the names of other exhibitors. Considering its limited resources, the club cannot be too highly complimented upon its usefulness, which would undoubtedly be greatly extended if the Government would only extend to it some little liberality in the shape of a small annual grant, and this the club still hopes to be fortunate enough to secure. With the view of endeavouring to render itself even more widely known than it is at present, the club has undertaken the publication of its transactions, and of the natural history of the colony generally, under the title of the *Victorian Naturalist*, to which contributions, either in the shape of subscriptions or natural history notes, are earnestly solicited. The exhibits at the *conversazione* this evening may not be quite so numerous as on previous occasions, but this is owing to the fact that several of our members have been induced to send their collections to the present Intercolonial Exhibibition. A want long felt is now about to be supplied. I allude to the nomenclature of our insects, so many of which are unnamed, but the London Entomological Society, in response to our application, has kindly consented to name any specimens the club may send, and this offer will be certain to be availed of very extensively." A short time ago I wrote a letter to Professor M'Coy, which, with his answer, I will now read:—

"73 Chancery-lane, March 18, 1884.

"My Dear Professor,—When I accepted the position of president of the Field Naturalists' Club, I thought that I was merely stopping a gap till the rules could be altered, and you replaced in your old chair. But I now find myself face to face with what to me is a very grave difficulty. I have to deliver the annual address at the meeting in April. Of course it is an easy task, with the aid of our active and skilled secretary, to give a history of what the club has done during the past year, but the president's duty should not stop at that point. He should be able to do what you have hitherto done, namely, suggest the directions in which the energies of the club should be directed in the coming year. He should be able to fairly estimate the scientific worth of what has been done in the last 12 months, and tell the members what to do in the future. As you have been such a friend of the club hitherto I have taken the liberty of writing to you, not so much to assist me personally out of a difficulty, but to give the club the benefit of any words of advice which your profound knowledge of natural science and natural history may suggest. As a man who has devoted his life to these studies, you cannot but take an interest in anything which may further investigation in subjects with which you are so familiar. I

am induced to hope that you will not turn a deaf ear to my request, but that you will on this, as on former occasions, give us the benefit of your views.—Believe me to remain, yours faithfully,

"F. Stanley Dobson.

"Professor M'Coy."

"University, April 28, 1884.

"My Dear Dr. Dobson,—In answer to your invitation to suggest some subjects of investigation for the next year's work of the Field Naturalists' Club, of which you are president, I think the most interesting and useful line of investigation not yet touched by the club, and yet particularly suited to its functions, is the subject of the vegetable parasites belonging to the class of insects, both native and introduced, which are injurious to cultivated and native plants. The philoxera of the vine is so like the species of other plants, that it is very important that members of the club travelling much and observing in the field should endeavour to ascertain whether other species are in the country, and particularly to find out whether the P. vastatrix attacks any other plant here, for if so, the destruction by the state of vineyards would have to be supplemented by other precautions. I suggest this subject of research because I have collected a great deal of evidence to prove that other imported parasites spread to plants of very different species and genera to those to which such parasites are confined in their own country. In one of the early decades of the *Prodromus* of the zoology of Victoria, I pointed out that the caterpillar of the Agarista glycinæ, which is a native insect, had left its native proper food, the gnaphalium introalbum, to attack the foliage of the vine, doing immense damage to the vineyards, although the plants are so dissimilar in all respects. I would now suggest that the members should next year determine as many other similar cases as possible. Mr. Carson sent me some weevils last year, collected from his apple trees, which he thought might be the American apple weevil, which does such mischief in the United States as to be thought worthy of a quarto illustrated memoir to itself; but on examination I found they were a native species, chiefly confined to the gum trees in the bush, and it would be highly interesting if the members of the club would, by multiplied observations in the field, ascertain whether it has really acquired the habits destructive to the apple of its American representative. Professor Nanson sent me down a branch of an apple tree from Mount Macedon which was showing signs of death, the cause of which I found was the multitude of the mytilaspis covering the bark, specifically identical with that which destroys the apple orchards in Europe and America; and I now find it has departed from its old-world habits, and commenced the destruction of several different species and genera of plants which it had not been known to attack before. The commonest of our native species of Icerya I have studied at the few opportunities I have for field work, with one certain result of very serious importance probably in the future—namely, that it brings forth young at every season of the year—for I find that it is now leaving its native plants and attacking imported plants of the most dissimilar character to its native proper food—fruit trees and large pine trees being killed by it in my grounds at Brighton. To determine the list of valuable imported plants which it now feeds on would be very useful and interesting. Another point, concerning which the help of numerous observers in the field is necessary to ascertain the precise fact, is the determination of which precise species of ichneumon bores and destroys each of the Coccidæ, or scale insects, which fortunately, we see, are persecuted by native Hymenoptera, sometimes more than one species of ichneumon boring one scale insect. I have been able to find only a few to establish the fact with certainty, but the members of the club can work this field advantageously.

Another nearly allied line of investigation, in which little has been done in this country, specially requiring such an association as the club to

multiply and record the necessary out-of-door observation, is the determination, descriptions, and figuring of all the galls and their contents in the colony, and the settling the fact of whether each gall insect forms its galls on only one, or also on other, and if so, what plants? The galls are often singularly beautiful in form, unlike those known elsewhere, and, as in other countries, the different sorts are usually marked with peculiar colours, often contrasting remarkably and beautifully with the leaves on which they are developed. This requires the formation of water-colour sketches from the fresh objects, which should then be dried until the contained insects come out, whether those forming them, or parasites, which I find very numerous, which must in this way be connected with the peculiar galls. They form a work not yet even begun in this colony. The following out Sir J. Lubbock's researches on the habits of ants would be only possible in this colony, where they are so numerous, by the members of the club. The time has arrived when the members should make a determined effort, this year, to settle the question of whether the platypus lays eggs in its burrow or not. Coming to the end of my paper reminds me that I must not, like the brook, "go on for ever," with my suggestive remarks, curtailing the time of your eagerly-expected presidential address.—Ever, my dear sir, very faithfully yours,

"FREDERICK M'COY.

"The Hon. Dr. Dobson, LL.D., President Field Naturalists' Club of Victoria."

And now for a few remarks from myself personally. Many of you will have read in the newspapers that our distinguished member, Mr. A. H. S. Lucas, has established a field naturalists' club at the Wesley College, at which he is mathematical master, and the first expedition of the class to the seaside was eminently successful. This is an example well worthy of imitation, not only in our private, but also in some of our state schools. Cricket, football, and rowing, where it is possible, are very valuable in their way, as muscular exercises, which involve more or less skill; but it is extremely desirable that some other means of intelligently occupying leisure hours should be available to our young people, and Mr. Lucas deserves a high meed of praise for initiating this system in his school. The high honour of being made a Fellow of the Linnean Society has been recently conferred upon one of our members, whose labours among the flora of the Grampians have deservedly attracted the attention of the leading botanical society of the world. It is to be hoped that this distinction will stimulate Mr. Sullivan to increased efforts, and that our club will be from time to time informed of what he is doing. Mr. French, who has been such an active worker and reader of papers in the club, has met with some recognition of his scientific attainments by being appointed as an assistant to the Baron von Mueller, in the department of the Government phytologist. It is to be hoped that in his new position he may have more opportunities than in his old one of increasing his knowledge of his favourite sciences, and share with us the benefit which he himself receives. I would allude with regret to the small number of lady members on our roll. Botany is beyond all others a science for ladies. What lady is there who does not love flowers, or who walks through the bush in spring and does not gather a bouquet? But

if these ladies knew what a far higher interest they would feel in every walk they took if they would only study a little botany, we should find them come to us in numbers for assistance and advice. Of course there is the old objection to botany, that it uses such terribly ugly names to describe pretty flowers, but no science exists without its own terminology. A little steady application, however, renders the difficulty much less in reality than it appears. The committee might well consider the propriety of giving elementary lectures in the various sections of the club, so as to encourage beginners, and I trust to see something of the kind attempted at an early date. Having seen the immense good done by publishing a dichotomous key for the botany of Tasmania, I must regret that we having nothing of the kind here. Such keys, which have been published in Europe, have helped botanical students over what appeared to be insurmountable difficulties. But as some of you probably do not know what a dichotomous key means, I will explain it in the words of my late respected friend, the Rev. W. W. Spicer, of whose abilities as a botanist the Baron von Mueller once spoke in the highest terms. Mr. Spicer compiled the small book which I hold in my hand. He was a man who desired to bring his favourite science within the reach of everybody, and he adopted, as far as it was possible to do so, familiar English words in his descriptions. He therefore naturally feared to use so alarming a title for his book as "Dichotomous Key," and modestly called it "A handbook of the plants of Tasmania." It contains a short explanation of the only long words he uses, and the explanations are further explained by reference to drawings of the objects referred to. These drawings are from the pencil of his daughter, who I grieve to say died under very sad circumstances about a year after her marriage to a well known naval officer formerly on this station. The lithographs executed in Hobart do not do justice to the talents of the artist. Now let me explain in Mr. Spicer's own words how the key works, and how by means of it, anyone who has mastered the four or five pages of glossary, can find out the name of any plant he may pick up in Tasmania. I may mention that I never take a walk in the bush in this colony without my Spicer in my pocket. Even when loaded with gun and cartridges I always find room for this little volume. Mr. Spicer, in a chapter entitled "Method of using the system," writes :—

"The vegetable kingdom is, by common consent, divided into two sub-kingdoms, known respectively as phænogams and cryptogams, or flowering plants and flowerless plants. The latter sub-kingdom embraces an almost countless host of ferns, mosses, sea-weeds, &c., of which the first only, the ferns, come within the compass of the present work. Flowering plants fall into two classes, exogens and endogens. In the former the veins of the leaf are netted, and the numbers 4 and 5 prevail in the corolla and other parts of the flower; whereas in endogenous plants the leaf veins are parallel, and the flower with its organs is generally

separable into three or six parts. Exogens branch into three groups, viz.—Polypetals, in which the corolla is composed of at least two pieces ; gamopetals, in which the parts of the corolla are combined so as to form a single piece ; and apetals, in which the floral envelope is either single, the distinction of corolla and calyx being lost, or is altogether wanting. Following these primary divisions, are orders, genera, and species. As each of these groups of plants is founded on characters common to a large number of individuals, it is plain that if we can step by step eliminate such characters as are foreign to the particular specimen we have in hand, retaining those only which belong to it as an individual, we shall gradually isolate it from its surroundings and ascertain its name. It is on this principal that the system adopted in the following pages is based. However, as 'example is better than precept,' we will suppose that the reader is desirous of ascertaining the name of a plant, which turns out to be the well-known clematis, so frequently met with in the bush, decorating the trees and shrubs with its white starry flowers. Turning to the first pair of contrasted characters on page 1, we read as follows :—

1. Flowering plants, having stamens, pistils, and seeds. Phænogams 2.
„ Flowerless plants, &c. Cryptogams 123.

Ours is of course a flowering plant or phænogam, after which is placed the figure 2, so to that number we turn :—

2. Veins of leaf netted. Flower in four or five parts, &c. Exogens 3.
„ Veins of leaf parallel. Flower in three or six parts, &c. Endogens 107.

A glance at the leaves shows a surface of closely netted veins, and the flower is divided into four, occasionally five parts ; hence the plant is an exogen, and we go to number 3 :—

3. Corolla and calyx distinct : the former usually conspicuous. 4.
„ Corolla and colyx indistinguishable or wanting. Apetals 78.

There being but one floral envelope comprising both corolla and calyx, the specimen is apetalous ; we therefore pass at once to the bracket marked 78 :—

78. Stipules entirely or half sheating the stem, &c. 79.
79. Stipules normal or wanting. 80.

There are no stipules ; 80 therefore is the next number to be looked for :—

80. Perianth conspicuous, &c. 81.
„ Perianth obscure, &c. 83.

As the white perianth is decidedly conspicuous, we choose 81:—

81. Stamens numerous, inserted under ovary, styles several, &c. Ranunculeæ. 127.
„ Stamens two or four inserted on perianth. Style 1, &c. 82.

The numerous stamens and styles show that we have reached the right natural order, ranunculeæ. The next point is to determine the genus. For this we are directed to 127—

127. Leaves opposite, &c. Clematis. 514
„ Leaves alternate or radical, &c. 128.

The opposite leaves prove the plant to be a clematis. For the particular species we are referred to 514 :—

514. Stem herbaceous, erect, &c. C. Gentianoides 1
,, Stem woody, climbing, &c. 515.

One more step is needful, for our specimen is a woody climber :—

515. Anthers with a long point, &c. C. aristata. 2.
,, Anthers short, normal, &c. C. microphylla 3.

The anthers have long narrow points ; consequently the plant is clematis aristata. If the reader wishes to know something more about his specimen he will turn to No. 2 in the 'Systematic Arrangements.' There he will find what is its true place among the plants of Tasmania, and also from whom it received the name it bears, viz., the illustrious Robert Brown. For a full description he is referred to *Bentham's Flora Australiensis*, Vol. 1. p. 6; and to *Hooker's Flora of Tasmania*, Vol. 1, p. 2 (where it is described as C. coriacea), and p. 3 (as C. blanda). Lastly, he is informed that the species grows abundantly throughout the island." Now, why has not such a book been written, if not for Australia generally, at any rate for our colony? It is hard to say. With the magnificent work by Bentham and Sir Ferdinand von Mueller, and with the elaborate Census recently published by the latter, the work of complication should be easy. In those days of proposed federation, it would not be too much to ask each colony to contribute to the publication of a book which would be of immense value to all. The work might be placed under the superintendence of the Baron, assisted by a competent staff, and I believe that the several Governments would find that the sale would more than recoup the expense. Such a work, however, if compiled, should be sold at as cheap a price as possible, so as to be within the reach of almost everyone interested in botany. Whilst in Tasmania last
1883. January I heard from two different sources that a white waratah had been seen on the western coast, both at its north and south ends. Hoping to be able to distinguish my year of office by producing it here this evening, I called upon the Surveyor-General at Hobart, and asked him if he would permit his surveyors to offer on my behalf a reward of £5 for a flowering branch. I regret to say that I have not been successful, nor do I believe that such a plant could have remained so long undescribed if it existed at all. The Surveyor-General told me that on one occasion a specimen of the native laurel (Anopterus glandulosus) had been brought to him as a white waratah—a strange proceeding, as one can hardly understand how it was possible to mistake the latter, which is a saxifrage, for the former, which is a protead. It seems more likely that someone with a few hazy ideas of botany mistook the white protead, Lomatia tinctoria, for a white species of Telopea. In conclusion, I would allude to the unanimous regret that we feel at the lengthened indisposition of the Baron von Mueller, and express the hope that he may soon be restored to his health and his labours.

Field Naturalists' Club of Victoria.

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The Author of each article is responsible for the facts and opinions he records.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The fourth annual general meeting of the members of this club was held at the Royal Society's Hall, on Monday evening, 12th May, Mr. H. Watts, one of the vice-presidents, presiding. The attendance, owing to the inclement weather which prevailed, was not so numerous as was expected.

The following were elected to membership, viz., Messrs. D. H. McDonald, F. Reader, W. Hatton, H. Kendall, and W. Miller.

For the next monthly meeting, Mr. P. Dattari promised a paper "On the Locomotion of Coleopterous Insects." Two excursions were arranged for the month, viz., Saturday, 19th, to Brighton, and Saturday, 24th (Queen's Birthday), to Lilydale, the latter being under guidance of Mr. T. A. F. Leith.

The annual report and balance-sheet, which showed the club to be in a most satisfactory position, having been read and adopted, the election of office-bearers was proceeded with and resulted as follows :—

President, Rev. J. J. Halley ; Vice-Presidents, Mr. A. H. S. Lucas, M.A., and Mr. T. A. Forbes-Leith ; Treasurer, Mr. J. H. Matthias ; Secretary, Mr. F G. A. Barnard ; Assistant Secretary and Treasurer, Mr. G. Coghill ; Librarian, Mr. J. F. Bailey ; Committee, Messrs. C. French, D. Best, C. A. Topp, M.A., J. H. Gatliff, and J. E. Dixon.

The business having occupied nearly the whole of the evening, it was decided not to read any papers, but the usual *conversazione* was rendered the more interesting from the fact of there being a good show of exhibits. It comprised four specimens of Victorian Shells of the genus *Fusus*, viz., *F. crebriliratus*, *F. Novæ Hollandiæ*, *F. ustulatus*, and *F. pyrulatus*, by J. H. Gatliff ; Fossil Crustacean (*Pseudastacus Hakalensis*) from the cretaceous of the Lebanon, also rare variety of *Harpa imperialis*, from Zanzibar, by J. F. Bailey ; ten specimens of land and fresh-water shells collected around Melbourne, viz., *Unio*, *Physa*, *Planorbis*, &c., by J. E. Dixon; Orthopterous insects, Mantidæ and Phasmidæ, collected since last meeting, by F. G. A. Barnard ; four American birds, viz., Golden-winged Woodpecker (*Colaptes aniatus*), Baltimore Oriole (*Icterus galbula*), Migratory Thrush (*Turdus migratorius*), and Meadow Lark (*Sturnella magna*), by T. A. F. Leith ; Fresh-water alga (*Batrachospermum moniliforme*), by H. Watts ; six specimens of New Caledonian birds' eggs, viz., Wood swallow (*Artamus melaleucus*), Flycatcher (*Rhipidura Bulgeri*), Gerygone (*G. flavolateralis*), Thrush (*Merula xanthopus*), Zosterops (*Z. xanthochlora*), and Turnix (species unknown), by A. J. Campbell ; and a number of Exotic Cetonidæ, by P. Dattari.

A hearty vote of thanks having been accorded to the retiring office-bearers the meeting separated.

THE June monthly meeting of the Club was held at the Royal Society's Hall, on Monday Evening, 9th inst. There was a good attendance of members, and Mr. T. A. F. Leith, one of the vice-presidents, presided.

Mr. C. Hellstein was elected a member of the Club, and four gentlemen were nominated for membership.

The hon. Secretary reported the results of the excursion to Brighton on May 17th. viz., the finding of 8 species of orchids, including Pterostylis vittata. He also reported that 14 species of ferns had been obtained at the Club excursion to Lilydale on the Queen's Birthday, May 24th.

The hon. Librarian acknowledged the receipt of six new publications for the Library, being Transactions Linnæan Society of N. S. Wales for 1883; Report of Royal Socety of Tasmania for 1883; Report of Entomological Society of Ontario for 1883; the Phanerogamia of the Mitta Mitta by J. Stirling; Eucalyptographia, part 9; and the Supplement to Fragmenta, viz., Australian Fungi, by Dr. Cooke—both presented by Baron Von Mueller.

A special excursion to Frankston on July 1st. (Separation Day) was arranged when it is expected Mr. N. J. Caire will be present to take a photograph of "the Field Naturalists at work".

The papers read were by Mr J. F. Bailey "Some notes on Land and Fresh water shells collected in the Dandenong district by Col. T. B. Hutton." Nineteen species were described, three or four of which had evidently been introduced from other countries, but four were undoubtedly Victorian, and new to science. Messrs. Lucas and Gatliff gave other instances of the occurrence of land shells in Victoria.

Mr. D. Best read a paper contributed by Dr. Woolls, of Sydney, on "Double Flowers," in which the writer mentioned several instances of native double flowers having been found in New South Wales, and stated his theory as to their cause, &c. Mr. French mentioned having found double flowers on several occasions in Victoria.

Mr. Watts drew the attention of the members present to the series of drawings of microscopical specimens in Bolton's Portfolio, and pointed out those which he had found during his researches in Victoria.

The following were the exhibits of the evening:—By Mr. A. H. S. Lucas, dried British species of *Utricularia* and *Pinguicula*, and a species of *Tænia*, from *Canis Dingo*; by Mr. G. Coghill, five species of Orchids in bloom, from Hawthorn, viz., *Pterostylis vittata*, *P. præcox*, *P. nutans*, *P. concinna*, and *Acianthus exsertus;* by Mr. J. H. Matthias, walking stick made from stem of giant cactus of Arizona; by Mr. H. Kennon, eggs of Lowan or

Mallee Hen, (*Leipoa ocellata*) ; by Mr. D. Best, birds recently shot at the Bunyip, and duplicates of Australian Buprestidæ ; by Mr. T. A. F. Leith, five species of American birds, viz., Orchard Oriole, (*Icterus spurius*), Black Snow-bird, (*Juneo hyemalis*), American Gold-finch, (*Chrysometris tristis*), Summer Yellow-bird, (*Dendrorea æstiva*), Black and Yellow Warbler, (*Dendrorea maculosa*) ; by Mr. C. French, Australian Longicornes, (sub-family *Lamidæ*) ; by Col. T. B. Hutton, 19 species of Land and Freshwater shells collected in Dandenong district ; by Mr. J. F. Bailey, new fossil tooth of whale from Miocene formation at Drysdale, and several fine specimens of West Australian star-fish ; by Mr. J. H. Gatliff, eight species of shells of genus Cancellaria :—*C. excavata*, *C. granosa*, *C. undulata*, *C. lævigata, and C. Tasmanica*, from Victoria, *C. reticulata*, from West Indies, *C. rugosa*, from Phillipine Islands, and *C. costifera ;* by Mr. F. Reader, a well-mounted series of New Zealand ferns ; by Mr. J. E. Dixon, twelve species of Victorian birds' skins, prepared by himself, viz., Spine bill, (*Acanthorhynchus tenuirostris*,) White-plumed honey-eater, (*Ptilotis penicillata*,) New Holland honey-eater, (*Meliornis Novæ Hollandiæ*,) Brown tree-creeper, (*Climacteris scandens*,) Reed warbler, (*Calamoherpe Australis*,) White-shouldered campephaga, (*C. humeralis*,) White throated thickhead, (*Pachycephala gutturalis*) Striated diamond bird, (*Pardalatus striatus*) Superb Warbler, (*Maturus cyaneus*,) Grey-backed Tosterops, (*Z. cærulesceno*) Flame-breasted robin, (*Petroica Phœnicia*,) and Welcome Swallow, (*Hirundo frontalis*,) also two species of intestinal worms from native animals.

After the usual *conversazione* the meeting terminated.

HON. SECRETARY'S FOURTH ANNUAL REPORT.

Mr. Chairman and Gentlemen,—

At the termination of the fourth year of its existence, we have again the pleasure to congratulate the members upon the flourishing condition of the club.

The number of members has certainly not greatly increased, but this is partly accounted for by our having erased from the roll several who, after repeated applications for their overdue subscriptions, failed to respond, and these have been rather more than replaced by the thirty-seven who have since joined ; the number now being about 175, excluding the hon. members.

The papers read have fully maintained, if not excelled, in value those of previous years, and it is evident that the information disseminated by means of these papers is gradually tending to create a more general interest in the natural history of the Colony, this being one of the principal objects for which the club was originally formed, and as a consequence in the increased popularity of the club also.

It is with regret we have to announce that the Geelong, as also the Sydney Field Naturalists' Clubs have apparently ceased to exist, as no reports have been received from them for some time past, neither have any from the Dunedin Club, but whether it has collapsed or not we are unable to state. As against these failures, we have to record that a Field Naturalists' section of the Royal Society of South Australia was inaugurated at Adelaide some few months since, and, judging from the reports regularly forwarded to us by the hon. secretary, is displaying wonderful energy, particularly as regards its excursions, from its manner of conducting which, we think, our own club might well take a useful lesson.

Our excursions have, in the main, been fairly well attended, but we think, that if for the future the member who has charge of one of these excursions were to furnish a list of those attending, and a report of the work done, they would greatly extend in popularity, as there can be no doubt much practical information is to be derived from them. We therefore strongly recommend the adoption of this suggestion.

Our repeated applications to the Government for a small money grant to enable us to extend our usefulness, more especially in the direction of carrying out a previous resolution of offering prizes to the pupils attending the schools in and around Melbourne, for collections of, and essays on, the Natural History of the Colony, have, we are sorry to say, been unsuccessful. Certain we are that our Club far more deserves support than many other institutions, and we therefore hope that our successors will persevere in the determination to obtain recognition, and be more fortunate than we have been.

The Library is gradually becoming more and more valuable, not only from the additions of the periodicals to which the Club subscribes, but also from the donations made to it by members and others.

During the year, finding that the proprietor of the S.S. Record was evidently unable to bring it up to date, and it being fully six months in arrears, your Committee decided, after very careful consideration, and with the approval of the Club, to start a journal on the Club's own account, and Mr. A. H. S. Lucas consented to undertake the arduous duties of Editor. The name adopted was the "Victorian Naturalist," four numbers of which have so far appeared, and although at present of humble pretensions, it will no doubt shortly be the recognised journal of the natural history of the Colony. So far, it has not repaid the cost of publication, but if only all, or even the greater number, of the members would subscribe, it would quickly do so, and we therefore appeal to you for assistance in the endeavour to make it self-supporting. The public, as evinced by the increasing sales at the booksellers, are beginning to recognise

its value, and before the close of another year, we confidently anticipate that the whole of the 250 copies of each issue will be disposed of each month. Contributions in the shape of natural history notes, are also earnestly solicited for the journal. As our endeavours must be to make it as interesting as possible to the general public, our appeal in this direction also will, therefore, we hope, be well responded to by members and others, as there can be few who in the course of their walks in the fields or parks, do not observe something worthy of recording. For the present, 250 copies are published monthly, at a cost of £3, so that you can see how easy it would be not only to make the journal self-supporting, but even an active benefit to the Club, as the sale of, say 200 copies, would realise £5, thus leaving a surplus of £2, and thereby justify an increase in size from 8 to 16 pages, an increase which is most urgently desirable.

The Annual *Conversazione* took place on Wednesday evening, 30th April, and was in every way successful. The address and lecturettes were carefully listened to, and the exhibits were both numerous and interesting. As full details will appear in the "Victorian Naturalist" for May, we do not consider it necessary to further attend to it here. We would, however, whilst on the subject of the *conversazione*, express a strong recommendation that at the next one, there may be large numbers of live exhibits, as these, with remarks as to their habits, &c., could not fail to form a great source of attraction. Members therefore, will we hope, bear this recommendation in mind, and at once see about obtaining specimens, so that they may have them ready in ample time.

The Treasurer's statement shows a substantial balance in hand, and, as many back subscriptions are still to be received, a portion of which will doubtless be paid, and as also there have been expenses which will not be necessary during the ensuing year, we think we may fairly consider our position a very sound and satisfactory one.

The Committee meetings have been attended as follows, viz.:—

Mr. Watts - - - - - -	11
„ Leith - - - - - -	12
„ Howitt, unwell for the last 8 months, owing to a railway accident - - - -	—
„ Matthias, absent from the colony for greater part of year	2
„ Best - - - - - -	12
„ Bailey - - - - - -	11
„ French - - - - - -	9
„ Lucas - - - - - -	8
„ Sayce - - - - - -	5
„ Barnard - - - - - -	10
„ Gatliff - . - - - -	12

In conclusion, we would urge upon our successors the necessity of inducing more of the members to contribute papers, as it is principally by this means that the success of the Club is to be

achieved. We shall therefore hope that the coming year will introduce to the Club, papers by those who have hitherto from a feeling of modesty refrained from contributing, thus giving the Club the benefit of their valuable observations.

For and on behalf of the Committee.

DOUBLE FLOWERS.

By Rev. W. Woolls, Ph.D., F.L.S.

A few years since, a writer in one of the English periodicals mentioned it as a remarkable circumstance that no double flowers had been found in Australia, and he gave several reasons for supposing that, in this part of the world, there was an absence of such causes as lead to the phenomenon in other countries. At the period to which I refer, there was no record, so far as I have observed, of any such flowers, for the volume of Baron F. von Mueller's *Fragmenta*, in which he alluded to some double Epacrids, had not been published, and perhaps no one in the colony with the exception of the late Sir William Macarthur had paid any attention to the subject. When some fifteen years ago, *Epacris purpurascens* was found with double flowers at the North Rocks, near Parramatta, and also in the neighbourhood of Sydney, Sir William assured me that he had seen similar flowers in the bush at Elizabeth Farm many years previously. Since that time, different observers have paid attention to the subject, and *E. microphylla* has been found with double flowers at the North Shore and Manly Beach. Two other monopetalous flowers have been found in a similar state, viz., *Convolvulus erubescens* and *Wahlenbergia graeilis* (the Australian Blue Bell), the former by the Rev. T. V. Alkin, M.A., at Campbelltown, and the latter by the writer in the immediate neighbourhood of Richmond. Amongst polypetalous flowers, Baron Mueller mentions *Eriostemon obovalis* as occurring with double flowers ; and the Common Buttercup (*Ranunculus lappaceus*) has been noticed near Bathurst and Parramatta in the same condition. *Rubus rosifolius*, a native plant, is often seen with double flowers when in cultivation, but I am not aware that it occurs so in a wild state. It is probable, however, that it does. Double flowers are generally great favourites with floriculturists, and they are usually supposed to be the result of hybridization assisted by cultivation, by which process the petals are increased in number by the transformation of the the stamens and pistils. In flowers really full, the whole of these are thus changed into petals, but in multiplicate and proliferous flowers, this is only partially the case. The causes which

occasion such flowers in a wild state, and indeed the true character of the organs which are liable to change, need further investigation. Professor Sachs remarks that "the morphological homology of the separate parts of the ordinary stamens is not yet altogether determined, more precise investigations into the history of development being still wanted in that direction." Some writers consider the two anther-lobes as the swollen lateral halves of the lamina of the stamen, and their loculi as mere excavations in the tissue of the leaf; but this according to the same eminent writer, cannot be the case, as in the conversion of stamens into petals, "the anterior and posterior loculi do not stand opposite each other, which would be the case if one belonged to the upper, the other to the under side of the staminal leaf." However this may be, it may be inferred that flowers in a wild state are exposed accidentally to the same causes which are said to influence them under cultivation, and that the stamens and pistils may be affected with hybridization through the agency of bees and other insects, without the intervention of art; whilst nature herself may bring about atmospheric changes favourable to the excessive development of petals. If in the early days of the colony, double flowers did not exist in a wild state, and if long after the foundation of the settlement, *Epacris purpurascens* was the only species known to have such, (the same having been found on Elizabeth Farm, near Parramatta), it may be concluded that the introduction of foreign bees and the increasing manure from cattle, have tended to augment the number of such cases. So far as observation has yet extended, I am not aware that any double flowers have been noticed beyond the settled districts, and if this be really the case, it seems to show that the writer to whom I have referred as stating that there were no such flowers in a wild state in Australia, was not so far wrong as we might suppose from more recent observations.

Mr. C. French stated that he had collected double flowers of Epacris impressa, of both white and red varieties, the former at Cheltenham, and the latter on Arthur's Seat, near Dromana. He had also found double flowers of Sprengelia incarnata by the Plenty River, and of Styphelia (Astroloma) humifusa, near Mt. Martha.

REMARKS ON THE ORCHIDACEOUS GENUS, LATOURIA,

By Baron von Mueller, K.C.M.G., M.D., Ph.D., F.R.S.

As long ago as 1848, Prof. Blume of Leyden established the genus Latouria in the fourth volume of his "Rumphia" mainly from a

drawing made at the commencement of this century by Mons. Latour-Leschenault in New Guinea, where as one of the Naturalists of Baudin's Expedition he discovered the beautiful and remarkable plant, which bears generically his name, it being specifically distinguished as L. spectabilis. As the plant seemed not to have been re-discovered, I was pleasingly surprised, when within the last few days I received as likely new from Ch. Moore, Esq., F.L.S., a flowering specimen from the Sydney Botanic Gardens, accompanied by a note, that he had received the plant for his conservatory from the Solomon-Islands. Thus an opportunity was aff rded me, to re-examine this evidently rare plant. I can bear testimony to the general accuracy of the illustration furnished at tab. 195, fig. 1 and tab. 199, C in the "Rumphia," and also to the description given at p.p. 41—42. Some details can however now be added to the latter; and this is all the more desirable, as Mr Bentham, (B. & H., Gen. Pl. III, 501,) lately expressed a doubt, whether the pollinia were correctly described, and thus the genus one of validity —The stem before me is fully $1\frac{1}{2}$ foot long, bearing 6 transverse scars; the leaves are nearly twice as long, but not broader than those illustrated by Latour, numbering 5; the raceme bears 10 flowers, which I find inodorous and resupinate, as shown alrea ly by the published drawing, the labellum turning upwards; the latter in its lower portion is almost whitish, in its upper pale-yellow, but so copiously traversed by dark-purple veins, as almost to assume that color, especially as the broad median line, with its but very slightly elevated streaks is also dark-purple; the upper lobe of the labellum curls readily inward along the margin, then assuming a hornlike shape; the lateral lobes are clasping behind the anther, the touching portions being connate for a short distance, but only lightly so, seceding from each other on slight mechanic pressure; the two-furrowed callus near the junction of the 3 labellum-lobes is whitish, and passes below into an equally callous plate of quadrate shape, which fits contiguously to the gynostemium; the anther is greenish, a very thin and narrow membrane turning upwards at its base; the yellow ceraceous *pollinia consist of two pairs*, coherent into a roundish mass, dorsally slightly concave, frontally convex, the pairs on pressure seceding, the two portions of each pair not quite so readily separable, equal in length, placed longitudinally.—The main characteristic, on which the genus rests, namely the supposed occurrence of only two simple pollinia, is therefore wrongly given, while the minor note of the anterior unison of the lateral labellum-lobes is also to some extent invalidated, as this coalescence is rather one of coherence than actual concrescence. It will thus be best to *reduce Latouria to a section of Dendrobium*, with which in all other respects it generically agrees. Indeed Prof. Miquel (flora Ind. Batav. III, 645) already surmised, that this plant should be regarded as a Dendrobium, altho' he had no opportunity to confirm this by any original observations.

ORCHIDEÆ OF VICTORIA.

By C. French, Govt. Botanist's Department. (Third Paper.)

Sarcochilus (Brown.)

Sepals and petals nearly equal, free, spreading, the lateral sepals often more or less dilated at the base. Labellum articulate at the end of the basal projection of the column without any spur at its base, 3 lobed, the lateral lobes rather large. Column short, erect, produced at the base. Anther terminal, lid like, Pollen masses 4, in pairs. Leaves flat and often falcate, Racemes axillary, Bracts small.

1. *Sarcochilus parviflorus* (Lindley.) A small but singular epiphytal Orchid, found growing on small trees. The color of flowers is creamy with yellow and reddish markings, which, in the specimens I have seen, are somewhat indistinct. This species was formerly considered very rare in Victoria, when about the year 1866, Mr. Taylor, of Messrs. Taylor and Sangster, found a few specimens whilst looking for ferns in the deep gully of the Dandenong ranges. I found two very small specimens adhering to a stunted plant of our Native Musk tree, (Aster argophyllus,) some couple of years afterwards, but I learn that it has lately been found in some quantity on the Tarwin River, in Gippsland, a locality where I believe many rare plants of both Ferns and Orchids still remain unearthed. As this is the only epiphytal species likely to be met with by our members, a lengthy description, other than the generic one given above, will be I think unnecessary. The leaves of this species I may mention grow to about 4 inches in length, and those who wish to search for it, should look in the darkest and most remote parts of the Fern gullies, more particularly on the upper branches of Musk and Native Hazel, (Pomaderris). *Sarcochilus Barklyanus*, *S. Gunni*, and *S. australis*, are identical with this species. Found in Victoria, New South Wales and Tasmania. Cultivation same as smaller species of Dendrobium.

This will conclude the list of the Epiphytal species, as far as I am aware. The next in order is

Dipodium (R. Brown.)

Sepals and petals nearly equal, free, spreading, labellum sessile, erect, column erect, semi-cylindrical, the membranous margin variously sinuate or toothed, anther lid-like, pollen masses 2. deeply lobed, or 4 in pairs, terrestrial, the leafy stems when present simple with distichous leaves, racemes on long leafless scapes, or long erect axillary peduncules, with sheathing scales at the base of the scape, flowers purple, rather large, often spotted.

1. *Dipodium punctatum* (R. Brown.) This is one of the most beautiful of our native Orchids, as it is also one of (if not the largest) of our Terrestrial species. In the Dandenong Ranges,

Dividing Ranges, Gippsland Grampians, &c., I have seen this superb species growing in the greatest luxuriance, often from 2 to 4 feet in height. It should be sought for on table land, and not in the gullies. It is somewhat difficult of removal, as the large tubers are nearly always found in the hardest ground in the district, and almost invariably amongst some roots or stumps which render it as I have before remarked, difficult to obtain the tubers without damaging them, which in this case, entirely destroys them. In lifting this species, (also Gastrodia,) a spade, and care should be used, as it is next to impossible to lift them entire with an ordinary collecting trowel. This species flowers about the end of December, and unfortunately, it seldom keeps its color in the Herbarium. To grow it, good strong loam should be used, water being sparingly given. The soil should be well pressed down in the pot, and it must have ample room. This species if well grown, would be a valuable addition to our collections of the Victorian Orchideæ. Many years ago, I found two fine specimens growing on the bank of the River Yarra, near the present site of the Horticultural Society's Gardens, and of late it has been found at Brighton ; it is, however, pretty generally distributed throughout the Colony.

Dendrobium Punctatum, sp. (J. Smith,) is synonymous with this species. Found in Victoria, New South Wales, North Australia, South Australia, and Tasmania.

Gastrodia (R. Brown.)

Sepals and petals united in a 5 lobed tube or cup, gibbous at the base under the labellum, labellum shorter than the perianth, column elongated, anthers lid-like, pollen granular, stigma on a short protuberance at the base of the column, herbs, parasitical on roots, leafless, and not green, scapes simple, erect, with short, loosely sheathing, brownish scales, flowers creamy white, in a terminal raceme.

1. *Gastrodia sesamoides* (R. Brown.) A large and singular Orchid, found growing on Table land in dense forests. The peculiar brownish colour of the stem and flowers will render it of easy recognition, there being no other species at all resembling it. This species is also of very difficult removal, and seldom seems to thrive well under artificial treatment, the principal reason of this being, that the large tubers which (as in the preceeding species Dipodium,) grow in the hardest soil, and almost always on, or close to a root, stump, or log. Mr. Benthan does not mention this peculiarity in the genus Dipodium, which, however, is as near as possible identical. In the forests of Gippsland, Gembrook, Fernshaw, Dandenong, &c., this species may be often found growing to a height of from one to three feet or even larger, and it would, I am sure, be a fitting companion to Dipodium, in any well cared for Victorian collection of Orchids. The culture of Dipodium will also suffice for this species. The flowers of this species dry a much better colour than those of the former. Found in Victoria, New South Wales, Queensland, and

Tasmania. I am acquainted with only one other species, which I show you here this evening, this being from New Zealand. Flowers in December and January.

SPIRANTHES (Rich.)

Dorsal sepal and petals erect, lateral sepal free and more spreading, all nearly equal, labellum sessile or nearly so, embracing the column by its broad base, column short, with a small, erect appendage or lobe on each side, anther erect, pollen masses 4, granular or mealy, sessile on a gland, rostellum short, bifid, terrestrial, herbs, with oblong, underground tubers, or thick clustered fibres, flowers small, spirally arranged in a terminal spike, stems leafy, or sometimes at the time of flowering with sheathing scales only.

Spiranthes australis (Lindley.) A very pretty, and in Victoria, somewhat rare species. The rhizome is short, stem glabrous, (seems even more so under cultivation,) lower leaves linear, or narrow lanceolate, spike spiral very dense, flowers sessile, pink and white, sepals and petals varying from $1\frac{1}{2}$ to 2 lines in length, labellum as long as the sepals. I may say that until the last season for Orchids, I had never been so fortunate as to find this species myself, and I am indebted to my friend, C. Schlipaulis, of the Botanic Gardens, for my first specimen, also for the information as to the locality where it was found by him, and after an unsuccessful attempt for a whole day, I was at last rewarded by finding a fine patch containing many good specimens, some of which were dried, and the remainder grown for the collection of living specimens. I may mention that this species cannot be mistaken for any other, because of its very singular spiral spike. I have found it growing on wet heathy flats, amongst rushes, and care should be taken by the ordinary observer, that *Stylidium graminifolium* is not mistaken for it, as at first sight it somewhat resembles the latter pretty and well-known plant. To grow it well, it should be placed in black sandy loam with plenty of fibre and an abundant supply of clean water. This species should, if well grown (say 6 or 8 tubers in a pot), make a very pretty pot plant. Flowers in January and part of February. It is a cosmopolitan species, and is found in Queensland, New South Wales, Tasmania, also in New Zealand, and in part of tropical and temperate Asia, extending to some parts of Europe. *Neottia Australis* of Brown, is synonymous with this species.

CALOCHILUS (R. Brown.)

Dorsal sepal erect, rather broad, concave, lateral sepals about as long, broadly lanceolate, spreading, petals shorter, broadly falcate, labellum as long or longer, the margin and whole surface densely fringed, except a narrow terminal point or ligula, column short, with a rather broad wing, anther bent forward at the base, pollen masses granular, terrestrial herbs, with ovoid tubers, leaf usually solitary, long and narrow, flowers few, in a terminal raceme.

1. *Calochilus campestris* (R. Brown.) This beautiful Orchid is,

I regret to say, becoming exceedingly rare in the vicinity of Melbourne, and even at Berwick, where I thought I knew where to lay my hand on it as in former years, I did not succeed in finding a single specimen. To those who are interested in Orchid collecting, there will be little difficulty in distinguishing this species, because of its beautiful and singular purple fringed labellum, which is totally different to any other Orchid, excepting perhaps, *C. Robertsonii*, which it much resembles, although it is not so rare as the latter species. In the good old days of Orchid collecting, twenty years ago, Mr. Schlipaulis and myself found the plant growing rather plentifully in the scrub lining the swamp, near which the Caulfield race-course grand stand now rears its pretentious head, the former grand stand (which many of you may remember,) being composed of four pieces of hard-wood quartering, and a paling roof. This inelegant edifice suddenly disappeared, and with it, evidently the Calochilus, for neither he or I could ever find it there afterwards. So much for civilization. This plant seems to accommodate itself to many soils, as I have found it in boggy heath land, at Caulfield, Berwick, and Cheltenham, on stony rises at foot of Mount William, and on ground in the Whipstick scrub, near Sandhurst, where the soil was as bare, and the neighbourhood as rugged and uneven as the St. Kilda road, since the removal of the Toll-gate. In the cultivation of this plant, I should advise to grow it in black, sandy soil, with plenty of drainage and abundance of clean water. This pretty species should be in every collection. Height about one foot, flowers in October and November, and in the higher districts, possibly later. Found also in Queensland, New South Wales, and Tasmania.

P.S.—Since writing the above, I have found it rather plentiful near Mount Eliza.

2. *Calochilus Robertsonii* (Bentham.) Described in the "Flora" as a stouter growing species than the former one, but with the leaf usually broader. The descriptions seem to be much alike, excepting that in this plant the labellum is fringed all over, and the two wings being connected at the base by a transverse raised plate across the base of the labellum, and of which, Mr. Bentham says, he sees no trace in the two other species, alluding to C. campestris, and C. paludosus. I have not found this species myself, but the very excellent drawings, kindly sent by my friend, Mr. H. T. Tisdall, of Walhalla, will enable you to form an idea by which you could identify it, should you be fortunate enough to meet with it on any of your excursions. Cultivation, time of flowering, probably same as that of C. campestris. According to the "Flora," this species is restricted to Victoria, but I see by the "Census," just published by Baron von Mueller, that it has also been found in South Australia. It might assist our members, to know, that before flowering, this genus may be easily mistaken for some of the larger growing species of Thelymitra. Flowers in November. Has been found many years ago by Mr. Schlipaulis at Caulfield.

Field Naturalists' Club of Victoria.

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The Author of each article is responsible for the facts and opinions he records.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The July monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, the 14th inst. There was a very large attendance of members and friends, and the Rev. J. J. Halley, president, occupied the chair.

The hon. secretary, for the librarian, acknowledged the receipt of the following publications since the last meeting, viz. :—"Proceedings of the Royal Society of Queensland, Part I. ;" "Prodromus of the Zoology of Victoria, Decade IX. ;" and from Baron F. von Mueller, a copy of "Forest Culture and Eucalyptus Trees," by Elwood Cooper.

The hon. secretary reported that the excursion to Oakleigh on June 14th, was rather poorly attended, and that the only plant of any note seen was the curious fern *Schizæa bifida*. The excursion to Frankston on July 1st was well attended, and the results were very satisfactory, and were reported in full by Messrs. French and Best.

The following ladies and gentlemen were unanimously elected members of the club :—Mrs. Robert Simson, Miss J. Clarke, Mrs. Jno. Simson, Miss Simson, Rev. Wm. M. Mackay Alexander, Mr. A. Christie, Mr. T. K. Marshall, and Master Dombrain.

Papers were read as follows :—Notes on the Genus *Utricularia*, by Mr. C. A. Topp, M.A. The writer described the peculiarities of this genus, of which there are three Victorian species, and by means of illustrations and drawings on the blackboard, demonstrated the structure of the utricles on the underground branches. These serve as traps for minute insects, crustaceans, &c., and thus give the plants the character of being carnivorous. The species more particularly referred to in the paper, was *U. lateriflora*, which is to be found in damp heathy spots about Caulfield, Oakleigh, &c. He also exhibited the utricles, &c., as mounted objects, under the microscope.

Dr. Dobson kindly read a paper by Messrs. French and Best, "Notes on the Club Excursion to Frankston on July 1st." This gave a very interesting description of the various Ornithological and Botanical specimens seen or obtained during the day. Dr. T. P. Lucas made a few remarks on his recent trip to New Caledonia and Fiji, and promised a paper on his experiences for next meeting.

The exhibits of the evening were as follows :—By Mr. P. Dattari, drawing of a gigantic cactus growing at Frankston ; by Mr. J. E. Dixon, ten species of birds collected at Beaconsfield on Separation Day, viz., *Myzantha garrula*, (Garrulous Honey-eater) ; White-eared Honey-eater (*Ptilotis leucotis*); Tasmanian Honey-eater (*Lichmera Australasiana*); Pied Robin, male and female, (*Melanodryus picata*); Flame-breasted Robin (*Petroica phœnicia*); Scarlet-breasted Robin (*Petroica multicolor*); Tawny Shouldered

Podargus (*Podargus strigoides*); Rosehill Parrakeet (*Platycercus eximius*): Sparrow-hawk; and Collared Crow-shrike; by Mr. C. French, Exotic and Australian Coleoptera, family Lucanidæ, &c.; by Mr. J. H. Gatliff, Victorian Shells, four species of genus *Cassis*, viz., *C. fimbriata*, and *C. pyrum*, from Portland, *C. semigranata*, from Rosebud, and *C. Achatina*, from Western Port; by Mr. T. A. F. Leith, four species of British birds, viz., Ring Ouzel (*Turdus torquatus*); The Dipper (*Cinctus aquaticus*); Water Rail (*Rallus aquaticus*); Purple Sandpiper (*Tringa maritima*); four species of American birds—Cow Bunting (*Molothrus pecoris*); Blue Robin (*Sialia Sialis*); Chewink (*Pipilo erythropthalmus*); Great Flycatcher (*Mijiarchus erinitus*); five species of Australian birds—Fairy Prion (*Prion ariel*); New Holland Snipe (*Gallinago australis*): Crescent marked Oriole (*Mimeta flavocincta*); Red Capped Dottrel, male and female, and Pallid Cuckoo: by Dr. T. P. Lucas, 180 species of Lepidoptera, &c., also pigeons and parrots, from New Caledonia and Fiji; by Baron F. von Mueller, the rare orchid, *Dendrobium spectabile*, from the Solomon Islands, in flower; by Mr. F. M. Reader, mounted specimens of New Zealand mosses, &c.; by Mr. O. A. Sayce, Tasmanian Coleoptera; by Mr. C. A. Topp, dried specimens of *Utricularia dichotoma* and *lateriflora*, anatomical and microscopical drawings of *U. lateriflora*, and microscopic slide of Utricles of *U. lateriflora*, in illustration of paper: by Mr. T. Worcester, three rare species of Mollusca, Voluta sophia, and V. macgillivrayi, from Torres Straits, and Ancillaria glabrata, from West Indies.

After the usual *conversazione* the meeting terminated.

THE BALLARAT FIELD CLUB AND SCIENCE SOCIETY.

The annual meeting of the Ballarat Field Club and Science Society took place at the Society's rooms, School of Mines, Lydiard-street, on Friday evening, the 20th June. The president, Mr. James Oddie, occupied the chair.

We regret that our exceedingly limited space will not permit us to give the President's address *in extenso*, but are glad to note that the Society is in a healthy state. It now possesses 51 subscribing and 11 honorary members, and has a balance in hand. The President for the ensuing year is Mr. James Oddie, J.P., the Vice-Presidents, Messrs R. Lewis, J.P., and A. Mica Smith, B.Sc., and the Secretary, Mr. F. M. Krause, F.G.S.

OBITUARY NOTICE.

We deeply regret to have to record the death of Mr. James F. Bailey, our librarian, and one of the most prominent members of the Field Club, at the comparatively early age of 43. The loss to the colony of such an enthusiastic and successful naturalist has been lamented in the public journals, and a fitting tribute paid to his memory. The sciences to which he devoted himself more particularly were palæontology and conchology. These he followed with an eagerness and energy all his own, and with signal success. He had probably a more complete practical knowlege of the Victorian Mollusca —both inland and marine—than any other worker in the colony. Many of the fine fossil specimens in our National Museum were obtained by him, and Professor M'Coy, in recognition of his services, has dedicated to him a species of whale whose ear and other bones Mr. Bailey discovered near Mordialloc. He maintained an extensive correspondence with naturalists of note in Sydney and Adelaide, and his work was recognised not only in the Australian colonies, but also in England and on the continent. His death was doubtless caused by the effects of exposure whilst recently working a newly discovered fossiliferous deposit on the coast near Frankston. The members of the Club will especially feel the loss of so diligent a worker, who was able and willing to exhibit so liberally objects of interest at our conversaziones, and at all times ready to afford valuable information on shells and fossils.

ORCHIDEÆ OF VICTORIA.

By C. French, Government Botanist's Department. (4th Paper.

Thelymitra (Forster.)

Sepals and petals all nearly equal and spreading, column erect, rather short, very broadly winged, anther erect or bent forward between the lateral lobes, or under the hood, pollen masses granular, without any, or with a small caudicle, terrestrial herbs glabrous, or very rarely pubescent on the leaf sheaths, with ovoid underground tubers, leaf solitary, usually with rather long sheath, the lamina linear, lanceolate, or rarely almost ovate, often thick, empty bracts 1 or 2 along the stem, flowers usually several in a terminal raceme, sometimes reduced to 1 or 2, blue, purple, red or yellow, occasionally with white varieties.

This is a very fine and showy genus, all of the Victorian species being of the easiest cultivation. I have divided it into sections, in accordance with the arrangement in the "Flora," as I dare say it will render the examination of the species somewhat easier.

Section 1. Cucullaria.

Column-wing produced behind and beyond the anther into a broad hood over it, variously lobed or fringed at the top.

Thelymitra aristata (Lindley.) This common though lovely species is, perhaps, the finest of the whole genus, the color being of a beautiful bluish violet. In some favoured spots this plant may be found in hundreds, and often two feet high, and these on a sunny day when in full bloom are a sight worth seeing, even to the most casual observer. This species is known to colonists as the Native Hyacinth, (I have certainly seen more absurd names given to plants than this one), and it may be looked for in all sorts of country, whether in heathy swamps, grass or forest land, stony rises, and in fact, nearly everywhere, although I have found the largest and handsomest specimens generally in damp, sandy soil. It is very easily grown as a pot plant, and it can be removed without difficulty. The best plan which I have found to grow it well, is to lift the plants before they come into bloom, and flower them in the pot, say 6 or 8 plants in one large (8 inch) pot, use plenty of drainage, and water rather sparingly, gradually witholding it as the blooms begin to fade. If properly attended to, it will flower year after year as well if not better, than when in its native situation. I wish to be understood that it is always preferable (if possible) to obtain the tubers whilst in the dormant state, but this can only be done by marking the places where the plants grow, a somewhat vague method, as when one goes to look for the place where he marked his Orchid, he may find a four-roomed cottage erected on the very spot, with a corresponding notice to trespassers in the vicinity. I must here confess that the difference in some of the species in this genus completely puzzle me, and I have to seek the scientific aid of the Baron to satisfy myself as to their identity. Flowers in October and November. Forms of this species are found in South and Western Australia, and in Tasmania.

T. ixioides (Swartz.) This beautiful Orchid is much rarer than either T. longifolia, T. aristata, or T. antennifera, being found but very sparingly near Melbourne. The stem is from 6 to 18 inches high, the flowers standing out very prominently from the spike, after the manner of T. epipactoides, a species which I shall mention further on. The flower is of a fine bluish purple, and very often the sepals are marked with a plum-colored blotch or spot, but the specimen here shown, Mr. Sullivan informs me, was quite plain, and I am not quite certain whether the typical color be spotted or plain. I have usually found it marked. It may be readily distinguished from T. aristata, by its more slender shape, although it shows signs of many points of variation, many of which can readily be

detected by observation in the field. The flowers are borne on a spike, to the number of one or two, and I believe, even three on isolated specimens. Sepals, petals and labellum, elliptical-oblong, column about 2 lines long, anther produced into an incurved point much longer than the rostellum. In the country around Oakleigh and Dandenong, this species used to be found, though sparingly, but for years I have never found one, and I am indebted to my friend Mr. Sullivan, of Moyston, for the specimen now exhibited. This species thrives well in sandy loam, and requires a little shade when in flower. T. ixioides, and T. juncifolia, are identical with this species. Found in Victoria, New South Wales, Tasmania, and in Western Australia. Flowers in October.

T. epipactoides (F. Mueller.) This very handsome Orchid which has of late been found rather plentifully in the Cheltenham district, is one of the most beautiful of the Australian Terrestrial species. The color of flower is of a light pinkish brown, a very free bloomer, and of the easiest cultivation. The appearance of the plant is like T. aristata, and it certainly approaches nearer to that species than to T. ixioides. The leaves are very broad, ribbed as in nearly all the larger species of this genus. Mr. Bentham remarks, "Flora Australiensis," page 318, that this species is perhaps a mere variety of T. ixioides, but I fancy that could he see it growing, he would be inclined to alter his opinion, and place it with the Baron, as a distinct species. To grow it well, sandy loam should be used, with plenty of pot room, keep somewhat damp whilst growing, and when coming into flower the full sun-light will be necessary for the proper expansion of the blooms. I know of few prettier tubers than this plant if properly grown, and during a recent visit of the Club to Brighton, a number of specimens were found, and quite surprised some of the members who had not seen it before. This species should be looked for in damp flats amongst the Epacris scrubs. I have not found it far from the sea coast. Height of plant and spike, from 1 to 2 feet. Flowers in October. I am not aware whether this species has been found out of our own colony.

Thelymitra longifolia (Forster.) A very pretty species, with long narrow leaves, and the whole plant and spike having a somewhat "drawn up" appearance. In the scrub lands at Caulfield, Brighton, Cheltenham, &c., and on the grassy hills of Berwick, &c., I have seen the plant growing by the hundred, and it seems to be equally at home in any ordinary soil. The flowers on this species are few, and rather large for the slender appearance of the stem, the color is purple, and often pinkish white, and even pure white varieties are to be met with. This species seems to seed very freely, as young plants in certain localities seem to be coming up in all directions. Column-wing produced behind and over the anther into a broad hood. This species when in the young state, is often mistaken for seedling plants of T. aristata, but it is easily distinguished when in flower. Treatment same as that of the former species. T. pauciflora,

T. arenaria, and T. versicolor, and T. graminea, are synonyms of this species. Flowers in October and November. Found in Victoria, New South Wales, Tasmania, South and Western Australia, and according to a list which I have received of the Orchids of New Zealand, it has been found in that colony also. This will conclude the Victorian species in the section Cucullaria.

Section 2. Macdonaldia.

Thelymitra antennifera (Hooker.) This charming though common species, is so well-known to most of you that a lengthy description seems to me almost unnecessary. Stem erect, purplish, wiry, and from 3 to 8 inches high, with the narrow linear rather thick, leaves of carnea and flexuosa, but stouter than in the latter species. Flowers 1, 2, or rarely 3, yellow, (highly scented,) and larger than those of T. carnea, but smaller than those of T. flexuosa, column-wings with erect, dark-colored lateral appendages. In the heath country, almost throughout the whole colony, this universal favourite is to be met with, often in large numbers, and to see it peeping out from amongst the beautiful Caladenia deformis reminds one of the lovely crocus borders of the old country. I know of no other Terrestrial Native Orchid which is so highly scented as is this species, and as it dries well, and is easily grown, it is, as I have before remarked, a great favourite with collectors of native plants. To grow it well, place say 20 tubers in a deep, small seed pan, use black, sandy soil with plenty of water when coming into flower. This plant, which was formerly known by the name of Macdonaldia antennifera, sp. (Lindley), is found in Victoria, South and Western Australia. Flowers in September and October.

Thelymitra McMillani (F. Mueller.) A rare and beautiful species. Discovered first by Mr. Thomas McMillan, late of our Technological Museum, and one of our most respected horticulturalists, whilst botanizing in the ranges called Mt. Martha, on the shores of our Bay. The specimen was submitted to Baron von Mueller, who at once recognised it as a new species, and named it after its discoverer. I forget the year in which it was found, but I think about 1862, and this was the only specimen taken, but a few years later, I, in company with Mr. C. Merton, of Law, Somner and Co., of this city, found another plant beautifully in flower. This was found between Frankston and Mt. Eliza, and the specimen was presented by me to the Baron, who I believe, sent it to Dr. Hooker. This Orchid is quite distinct in appearance from any of our native species, although it seems to me to approach nearer to T. carnea than to any other species. The color is a deep purple lake, and as you will see by the specimen (kindly sent to me by Mr. Sullivan, who has again found several plants in his district), it dries well. I have never tried to grow it, but I should think that the treatment of T. carnea would suffice for this species. Mr. Bentham thinks that it may possibly be a hybrid, but of this I am not competent to form an opinion. Found in Victoria, by Messrs. McMillan,

French, and McKibbon, (Maryborough district). I am not aware whether it has been found out of the colony.

Thelymitra carnea (R. Brown.) Stem slender, often flexuose, from under 6 inches to 1 foot high, with 1 to 3 pink flowers, the leaf narrow linear, and 1 or 2 bracts sometimes leaf like, sepals and petals oval, elliptical or oblong, column nearly half as long as the perianth, anther—connective, produced beyond the cells, but broad and obtuse.

This pretty and not very common species, should be looked for mostly on damp heathy flats, and it is also met with in damp, hilly places in the vicinity of mountains. The color ranges from a pale flesh up to a light magenta, and in some cases when growing in strong loam, it approaches very near to T. McMillani in color and general appearance. In former years, this little Orchid was somewhat common in the vicinity of Brighton, Caulfield, Dandenong, &c. but of late years it, as well as many other plants, has become somewhat rare and difficult to find. As a pot plant for a collection, it is very interesting, but it has a very provoking habit of unfolding its blooms very imperfectly, althought if plenty of light is provided, it will appear (if only for a few hours) in full bloom. To grow it well, black sandy loam seems to be best suited to its successful culture, plenty of water whilst growing, full light, plenty of drainage and proper rest for the tubers when past flowering. This species seeds very freely, and I hope on some other occasion to offer a few remarks on the fruiting of our Terrestrial Orchids, a subject, which I believe, has received very little attention, but having grown and flowered nearly 70 species, I have been able to make a few observations on the subject. Flowers in November and December. Found also in New South Wales, Tasmania, and South Australia.

Thelymitra flexuosa (Endlicher.) Stems slender, and usually wiry and flexuose, from 6 to 9 inches high, leaf narrow linear, rather thick, and the empty bracts sometimes leaf-like, flowers 1 and 2, yellow, smaller than in the other species, the sepals obtuse, column-wing continued behind the anther, but only half its length, anther produced into a thick, pubescent appendage.

A singular little species, flowering late in the season, often in January. It may be readily distinguished from T. antennifera by its much paler color, smaller flowers, and less prominent lateral appendages. I had the honor of finding this species for the first time near Melbourne nearly 18 years ago at Caulfield, when Baron von Mueller kindly named the specimen for me I had looked in vain for it during many years, but only succeeded in finding it again a few years since at Elsternwick, when I was much pleased to renew my acquaintance with this pretty Orchid. In a collection of Terrestrial Orchids, this species should form a good companion for T. antennifera, carnea, McMillani, and other slender growing kinds. To cultivate it, use black, sandy loam, plenty of water, and the treatment for the former smaller species will also suffice for this one.

Thelymitra concolor, Macdonaldia concolor, and Thelymitra smithiana, are synonymous with this species. Found also in Tasmania and Western Australia.

VICTORIAN FAUNA.

CLASS II. AVES—BIRDS

By T. A. Forbes-Leith and A. J. Campbell.

1. Aquila audax. *Lath.* Wedge-tailed Eagle.
2. Haliætus leucogaster. *Gmel.* White-bellied Sea Eagle.
3. Haliastur sphenurus. *Vieill.* Whistling Eagle.
4. Pandion leucocephalus. *Gld.* White-headed Osprey.
5. Falco hypoleucus. *Gld.* Grey Falcon.
6. „ melanogenys. *Gld.* Black-cheeked Falcon.
7. „ subniger. *Gld.* Black Falcon.
8. „ lunulatus. *Lath.* White-fronted Falcon.
9. Hieracidea orientalis. *Schl.* Western Brown Hawk.
10. „ berigora. *Vig. and Hors.* Brown Hawk.
11. Tinnunculus cenchroides. *Vig. and Hors.* Nankeen Kestrel.
12. Astur cinereus. *Vieill* New-Holland Goshawk.
13. „ Novæ-Hollandiæ. *Gmel.* White Goshawk.
14. „ approximans. *Vig. and Hors.* Australian Goshawk.
15. „ cruentus. *Gld.* West Australian Goshawk.
16. Accipiter cirrhocephalus. *Vieill.* Collared Sparrowhawk.
17. Gypoictinia melanosternon. *Gld.* Black-breasted Buzzard.
18. Milvus affinis. *Gld.* Allied Kite.
19. Lophoictinia isura. *Gld.* Square-tailed Kite.
20. Elanus axillaris. *Lath.* Black-shouldered Kite.
21. „ scriptus. *Gld.* Letter-winged Kite.
22. Circus Gouldii. *Bon.* Allied Harrier.
23. „ assimilis. *Jard. and Selb.* Jardine's Harrier.
24. Strix Novæ-Hollandiæ. *Steph.* Masked Owl.
25. „ castanops *Gld.* Chestnut-faced Owl.
26. „ tenebricosa. *Gld.* Sooty Owl.
27. „ flammea, L. (sub. sp. "delicatula") Delicate Owl.
28. Ninox strenua. *Gld.* Powerful Owl, (or Great Owl of the Brushes.)
29. „ connivens. *Lath.* Winking Owl.
30. „ boobook. *Lath.* Boobook Owl.
31. „ maculata. *Vig. and Hors.* Spotted Owl.
32. „ Œgotheles Novæ-Hollandiæ. Owlet Night-jar.
33. Podargus strigoides. *Lath.* Tawny-shouldered Podargus.
34. „ Cuvieri. *Vig. and Hors.* Cuvier's Podargus.
35. Eurostopodus albogularis. *Vig. and Hors.* White-throated Nightjar.
36. „ guttatus. *Vig. and Hors.* Spotted Nightjar.

37. Chætura caudacuta. *Lath.* Spine-tailed Swift.
38. Cypselus Pacificus. *Lath.* Australian Swift.
39. Hirundo frontalis. *Quoy and Gaim.* Welcome Swallow.
40. Hydrochelidon nigricans. *Vieill.* Tree Swallow.
41. Lagenoplastes Ariel. *Gld.* Fairy Martin.
42. Cheramæca leucosternon. *Gld.* White-breasted Swallow.
43. Merops ornatus. *Lath.* Australian Bee-eater.
44. Eurostomus Pacificus, *Lath.* Australian Roller (Doller Bird)
45. Dacelo gigas. *Bodd.* Great Brown Kingfisher (Laughing Jackass)
46. Halcyon sanctus. *Vig. and Hors.* Sacred Kingfisher.
47. „ pyrrhopygius. *Gld.* Red-backed Kingfisher.
48. Alcyone azurea. *Lath.* Azure Kingfisher.
49. Artamus sordidus. *Lath.* Wood Swallow.
50. „ personatus. *Gld.* Masked Wood Swallow.
51. „ superciliosus. *Gld.* White-eye-browed Wood Swallow.
52. „ leucopygialis. *Gld.* White-rumped Wood Swallow
53. Pardalotus punctatus. *Temm.* Spotted Pardalote (Diamond Bird.)
54. „ striatus. *Temm.* Striated Pardalote (Diamond Bird.)
55. „ affinis. *Gld.* Allied Pardalote, (Diamond Bird.)
56. „ xanthopygialis. *McCoy.* Yellow-rumped Pardalote (Diamond Bird.)
57. Strepera graculina. *White.* Pied Crow-shrike.
58. „ fuliginosa. *Gld.* Sooty Crow-shrike.
59. „ arguta. *Gld.* Hill Crow-shrike.
60. „ anaphonensis. *Tem.* Grey Crow-shrike.
61. Gymnorhina tibicen *Lath.* Piping Crow-shrike. (Magpie.)
62. „ leuconota. *Gld.* White-backed Crow-shrike
63. Cracticus robustus. *Lath.* Black-throated Crow-shrike
64. „ torquatus. *Lath.* Collared Crow-shrike.
65. Grallina picata. *Lath.* Pied Grallina (Magpie Lark.)
66. Grauculus melanops. *Lath.* Black-faced Grauculus.
67. „ mentalis. *Vig. and Hors.* Varied Grauculus.
68. Pteropodocys phasianella. *Gld.* Ground Grauculus.
69. Campephaga Jardinii. *Rüpp.* Jardine's Campephaga.
70. „ humeralis. *Gld.* White-shouldered Campephaga.
71. Pachycephala gutturalis. *Lath.* White-throated Thickhead.
72. „ rufiventris. *Lath.* Rufous-breasted Thickhead.
73. „ rufogularis. *Gld.* Red-throated Thickhead.
74. „ Gilberti. *Gld.* Gilbert's Thickhead.
75. „ olivacea. *Vig. and Hors.* Olivaceous Thickhead.
76. Colluricincla harmonica. *Lath.* Harmonious Shrike-thrush.
77. Falcunculus frontatus. *Lath.* Frontal Shrike-tit.
78. Oreoica cristata. *Lewin.* Crested Oreoica.

79. Rhipidura albiscapa. *Gld.* White-shafted Fantail.
80. „ rufifrons. *Lath.* Rufous-fronted Fantail.
81. Sauloprocta motacilloides. *Vig. and Hors.* Black Fantail.
82. Seisura inquieta. *Lath.* Restless Flycatcher.
83. Miagra plumbea. *Vig and Hors.* Leaden-coloured Fly-catcher.
84. „ rubecula. *Lath.* Shining Fly-catcher.
85. Micræca fascinans. *Lath.* Brown Fly-catcher.
86. Monarcha carinata. *Swain.* Carinated Fly-catcher.
87. Gerygone fusca. *Gld.* Brown Gerygone.
88. Smicrornis brevirostris. *Gld.* Short-billed Smicrornis.
89. Erythrodryas rhodinogaster. *Drap.* Pink-breasted Wood Robin.
90. „ rosea. *Gld.* Rose-breasted Wood Robin.
91. Petræca multicolor. *Vig. and Hors.* Scarlet-breasted Robin.
92. „ Goodenovii. *Vig. and Hors.* Red-capped Robin.
93. „ phœnicea. *Gld.* Flame-breasted Robin.
94. Melanodryas cucullata *Lath.* Hooded or Pied Robin.
95. Drymodes brunneopygia. *Gld.* Scrub Robin.
96. Eopsaltria Australis. *Lath.* Yellow-breasted Robin.
97. Monura Victoriæ. *Gld.* Queen Victoria's Lyre-Bird.
98. Psophodes crepitans. *Vig. and Hors.* Coach-whip Bird.
99. Sphenostoma cristata. *Gld.* Crested Wedge-bill.
100. Malurus cyaneus. *Lath.* Blue Wren or Superb Warbler.
101. „ longicaudus. *Gld* Long-tailed Superb Warbler.
102. „ melanotus. *Gld.* Black-backed Superb Warbler.
103. „ Lamberti. Lambert's Superb Warbler.
104. „ leucopterus. *Quoy. and Gaim.* White-winged Superb Warbler.
105. Amytis textilis. *Quoy. and Gaim.* Textile Wren.
106. „ striatus. *Gld.* Striated Wren.
107. Stipiturus malachurus. *Lath.* Emu Wren.
108. Sphenura brachyptera. *Lath.* Bristle Bird.
109. „ Broadbenti. *McCoy.* Rufous-headed Bristle Bird.
110. Hylacola pyrrhopygia. *Vig. and Hors.* Red-rumped Hylacola
111. Pycnoptilus floccosus. *Gld.* Downy Pycnoptilus.
112 Cisticola exilis. *Lath.* Exile Grass Warbler.
113. „ lineocapilla, *Gld.* Lineated Grass Warbler.
114. „ ruficeps. *Gld.* Rufous-headed Grass Warbler.
115. Sericornis humilis. *Gld.* Sombre-coloured Sericornis.
116. „ osculans, *Gld.* Allied „
117. „ frontalis *Vig. and Hors.* White-fronted „
118. „ maculatus. *Gld,* Spotted „
119. Acanthiza pusilla. *Lath.* Little Brown Acanthiza.
120. „ uropygialis. *Gld.* Chestnut-rumped „
121. „ pyrrhopygia. *Gld.* Red-rumped „
122. „ nana. *Vig, and Hors.* Little „
123. „ lineata. *Gld.* Striated Acanthiza.

124. Geobasileus chrysorrhæa. *Quoy. and Gaim.* Yellow-rumped Geobasileus.
125. „ reguloides. *Vig. and Hors.* Buff-rumped „
126. Ephthianura albifrons. *Jar. and Selb.* White-fronted Ephthianura.
127. „ aurifrons. *Gld.* Orange-fronted „
128. „ tricolor. *Gld.* Tri-colored „
129. Xerophila leucopsis *Gld.* White-faced Xerophila.
130. Pyrrholæmus brunneus. *Gld.* Red Throat.
131. Calamanthus fuliginosus. *Vig. and Hors.* Striated Calamanthus.
132. „ capestris. Field Calamanthus.
133. Chthonicola sagittata. *Lath.* Little Chthonicola.
134. Anthus Australis. *Vig. and Hors.* Australian Pipit.
135. Cincloramphus cruralis Brown Cincloramphus.
136. „ cantillans. *Gld.* Black-breasted „
137. Ptenædus rufescens. *Vig. and Hors.* Rufous-tinted „
138. Sphenæacus galactotes. *Temm.* Tawny Grass-bird.
139. „ gramineus. *Gld.* Little „
140. Calamoherpe Australis. *Gld.* Reed Warbler.
141. Mirafra Horsfieldii. *Gld.* Horsfield's Bush Lark.
142. Estrilda (Zonæginthus) bella. *Lath.* Fire-tailed Finch.
143. (Ægintha) temporalis. *Lath.* Red-eye-browed „
144. (Aidemosyne) modesta. *Gld.* Plain-colored „
145. (Stagonopleura) guttata. *Shaw.* Spotted-sided „
146. (Tæniopygia) castanotis. *Gld.* Chestnut-eared „
147. Cinclosoma punctatum. *Lath.* Spotted Ground Thrush.
148. „ castaneonotum. *Gld.* Chestnut-backed „
149. „ cinnamomeum. *Gld.* Cinnamon-colored „
150. Oreocincla lunulata. *Lath.* Mountain Thrush.
151. Ptilonorhynchus holosericeus. *Kuhl.* Satin Bower-bird.
152. Chlamydodera maculata. *Gld.* Spotted „
153. Mimeta viridis. *Lath.* New South Wales Oriole.
154. Corcorax melanorhamphus. *Vieill.* White-winged Cough
155. Struthidea cinerea. *Gld.* Grey Struthidea.
156. Corvus Australis· *Gmel.* White-eyed Crow.
157. „ coronoides. Hazel-eyed „
158. Pomatostomus temporalis. *Vig. and Hors.* Temporal Pomatostomus.
159. „ superciliosus. *Vig. and Hors.* White-eyed-browed „
160. „ ruficeps. *Hart.* Chestnut-crowned „
161. Meliornis Novæ-Hollandiæ. *Lath.* New-Holland Honey-Eater.
162. „ sericea. *Gld.* White-cheeked „
163. „ (Lichmera) Australasiana. *Shaw.* Tasmanian or Horse-shoe „
164. Glyciphila fulvifrons. *Lewin* Fulvous-fronted „
165. „ albifrons. White-fronted „

166. Ptilotis Lewinii. *Swain* Lewin's Honey-Eater
167. ,, vittata. *Cur.* Singing ,,
168.* ,, flavicollis. *Vieill.* Yellow-throated ,,
169. ,, leucotis. *Lath.* White-eared ,,
170. ,, auricomis. *Lath.* Yellow-tufted ,,
171. ,, (Lichenostomus) cratitia. *Gld.* Wattle-cheeked ,,
172. ,, ornata. *Gld.* Graceful ,,
173. ,, penicillata. *Gld.* White-plumed ,,
174. ,, fusca. *Gld.* Fuscous ,,
175. ,, chrysops. *Lath.* Yellow-faced ,,
176. ,, cassidix. *Jard.* Helmeted or Sub-crested ,,
177. Plectorhyncha lanceolata. *Gld.* Lanceolate ,,
178. Meliphaga phrygia. *Lath.* Warty-faced ,,
179. Certhionyx leucomelas. *Cur.* Pied ,,
180. Entomophila picta. Painted ,,
181. ,, (Conophila) rufogularis. Red-throated ,,
182. Acanthogenys rufogularis. *Gld.* Spiny-cheeked ,,
183. Anthochæra carunculata. *Lath.* Wattled ,, or Wattle Bird.
184. Anellobia mellivora *Lath.* Brush Wattle Bird.
185. Philemon corniculatus. *Lath.* Friar Bird or Leatherhead.
186. ,, citreogularis. *Gld.* Yellow-throated Friar Bird.
187. Acanthorhynchus tenuirostris. *Lath.* Spine-billed Honey-eater.
188. Myzomela sanguinolenta. *Lath.* Sanguineous ,,
189. ,, nigra. *Gld.* Black ,,
190. Entomyza cyanotis. *Swain* Blue-faced ,,
191. Melithreptus brevirostris. *Vig. and Hors.* Short-billed ,,
192. ,, gularis. *Gld* Black-throated ,,
193. ,, lunulatus. *Shaw.* Lunulated ,,
194. Myzantha garrula. *Lath.* Garrulous ,, or Miner.
195. ,, flavigula. *Gld.* Yellow-throated Miner
196. Manorhina melanophrys. *Lath.* Bell Bird.
197. Dicæum hirundinaceum. *Shaw.* Swallow Dicæum.
198. Zosterops cærulescens. *Lath.* Grey-backed Zosterops.
199. Climacteris scandens. *Temm.* Brown Tree-creeper.
200. ,, erythrops. *Gld.* Red-eye-browed ,,
201. ,, leucophæa. *Lath.* White-throated ,,

* Gould's Handbook, also Ramsay's Tabular List.

CORRESPONDENCE.

Early Flowering of Native Plants.

I think it would make these columns more interesting if readers of the *Naturalist* would forward notes of the early flowering of our native plants, or early appearances of insects, or other similar notes on Natural History subjects. In connection with the above, whilst rambling along the banks of the Mullum Mullum Creek, Warrandyte, on July 13th, I came upon two fine young trees of the Silver Wattle Acacia dealbata just bursting into blossom. Correa.

EXCHANGES.

Mr. H. Watts will be glad to exchange specimens of Fresh-water Algæ or Desmids with collectors in any of the Australian colonies. If possible, the Algæ should be in fructification. No. 20, Wellington Street, Collingwood.

Mr. C. French would be glad to give Australian or Foreign Insects in exchange for specimens of Australian Economic Insects and their larvæ. Arnold Street, South Yarra.

Dr. Lucas wishes to exchange Australian Lepidoptera and Birds' Eggs with other Collectors. South Melbourne.

Micro-Fungi.—Being interested in micro-fungi, I should be glad if any readers of the "Victorian Naturalist" would forward me specimens of plants, leaves, &c., affected by them.—F. Barnard, Kew.

NOTICE.

All communications for the "Victorian Naturalist," should be sent to the Editor, A. H. S. Lucas, M.A., B.Sc., F.G.., Albert Road, Albert Park.

Field Naturalists' Club of Victoria.

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The Author of each article is responsible for the facts and opinions he records.

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FIELD NATURALISTS' CLUB OF VICTORIA.

THE Monthly Meeting of the Club was held at the Royal Society's Hall, on Monday, the 11th inst., about forty-five members and visitors being present, and the President, the Rev. J. J. Halley, occupying the chair.

The hon. librarian acknowledged the receipt of the following donations to the library since last meeting :—"Report of the Timber Board, Victorian Railways;" "Report of the Department of Agriculture for 1883;" "Report of the Microscopical Society of Victoria for 1883;" and "Report of the Smithsonian Institution, Washington, U.S. A., for 1881."

The hon. secretary reported that the monthly excursion held at Brighton, on 19th July, had been fairly attended, and the results very gratifying to those present, six species of orchids having been found in flower.

The president referred in feeling terms to the great loss the Club had sustained through the death of Mr. J. F. Bailey, the librarian, and one of the original members, and trusted that the work commenced by him in the departments of conchology and palæontology, would be taken up by some other members. He also announced that Mr. C. French had been elected librarian, and Mr. H. Watts to the vacancy on the Committee.

The hon. secretary read the letter of condolence, which would be signed by the office-bearers and forwarded to Mrs. Bailey.

The Hon. R. Simpson and Mr. W. Allison Clarke were elected members, and Dr. J. C. Cox, Sydney, and Dr. Otto Finsch, hon. members of the club; whilst three ladies and eight gentlemen were nominated for election at next meeting.

A paper, "Notes on Lyre Birds," was promised by Mr. A. J. Campbell, for a future meeting.

1. Mr. Best read a paper for Mr. Dattari "On the Locomotion of Coleopterous Insects. This, it was explained, was the first of a series of four papers on the subject. In it, the writer described the structure of the antennæ and their position in the different families of beetles, illustrating his remarks by enlarged drawings of the various parts. He stated that the use of the antennæ was still a matter of doubt, but that he would treat more fully of the question in his next paper.

Several members took part in the discussion which followed, chiefly with reference to whether the antennæ could be termed organs of locomotion.

2. Mr. Campbell read a paper by Mr. F. H. Reed, of Evandale, Tasmania, entitled, "Notes on Tasmanian Snakes." The writer stated that he was familiar with four species of snakes indigenous to Tasmania. He related several experiments which he had tried with regard to the effects of the poison, and stated that he believed

action of the venom to be much more severe when naturally than when artificially injected, and that the quickness with which it acts depends upon the heat of the blood.

An interesting discussion took place after the reading of this paper, which in the main sided with the author.

The papers by Mr. Reader and Dr. Lucas, were postponed, owing to the lateness or the hour.

The Chairman drew attention to a book by Galton, recently published in England, containing photographs of what are termed "type faces," and explained the method by which they were produced. The exhibits of the evening were as follow :—By Mr. D. Best, Victorian longicorn beetles ; by Mr A. J. Campbell, eggs of the Australian night-jars, viz., spotted night-jar *(Eurostopodus guttatus)*, white-throated night-jar *(E. albogularis)* and large-tailed night-jar *(Caprimulgus macrurus)* ; by Mr. A. W. Coles, mounted Rose-hill parrakeet, and English stoat, mole and dipper ; by Mr P. Dattari, Australian and Exotic Coleoptera in illustration of his paper ; by Mr. J. E. Dixon, five species of Victorian birds, viz., wattled honey-eater (*Anthochæra carunculata*), magpie lark (*Grallina picata*), Pennant's parrakeet (*Platycercus Pennantii*), Grey crow shrike (*Strepera anaphonensis*) and the silver gull ; by Mr T. A. Forbes-Leith, a splendidly mounted specimen of the white Goshawk (*Astur Novæ-Hollandiæ*), also six species of American birds, viz., golden-winged woodpecker (*Colaptes auratus*), downy woodpecker (*Picus pubescens*), shore lark (*Alander alpestris*), white-throated Sparrow (*Zonotinula albicollis*), white-bellied nuthatch (*Sitta Carolinensis*), and Red-bellied Nuthatch, (*Sitta Canadensis*) ; by Mr. C. French, the rare Queensland bettle *Oryctes Muelleri*, also spring wild flowers from Brighton ; by Mr. H. Kennon, curious lichen from Dandenong ; by Mr. J. E. Prince, entomological specimens ; and by Mr. T. Worcester, two specimens of the rare shell *Conus cinereus* from New Guinea.

After the usual *conversazione* the meeting terminated.

BALLARAT FIELD CLUB.

We append an account of the microscopical exhibits at the Annual Conversazione of the above club, which we were unable from lack of space to insert in our last issue :—Mr. W. H. Wooster, M. Mic. Soc. Vic., showed stained plant sections e.g. juncus communis, clematis, scented verbena, pteris aquilina (these were shewn stained red and blue, and also red and green) ; casuarina, pine, orange, *Acacia mollissima; Eucalyptus globulus*, *Banksia australis*, sword grass, lime tree and blackberry (these were stained red and green);

and plane tree (stained with fuchsine). Also leaf of *Deutzia scabra* with veins stained red and the stellate hairs green. Mr. A. Mica Smith, B. Sc., exhibited a very beautiful series of specimens of marine bryozoa from Port Phillip Bay, viewed by 1½inch objective, the slides having been prepared by Mr. Trelour. He next showed a series of slides illustrating varieties of vegetable cells and vascular tissue, stomata, hairs, and pollen ; and finally a suite of specimens of Protozoa from slides prepared by Mr. Wooster. Mr. H. Sutton exhibited under paraboloid illumination specimens of Diatomaceæ, *Heliopelta* and *Coscinodiscus*, also under same illumination *Rotifer vulgaris* and *Vorticella nebulifera*. The instrument being a specially good binocular by Crouch, served under the dark field illumination to bring out the objects admirably, using the half-inch objective with A eye pieces. Mr. F. J. Martell showed the circulation of blood in the hind foot of a living frog. This instrument was surrounded by a crowd of spectators throughout the evening. Mr. W. Burbidge exhibited a large collection of chemical salts crystallized on glass slips. The object was to show both the forms of crystalisation, and the mode of detecting the presence of adulterants, poisons, etc., in too minute quantities to be subjected to chemical examination. W. Usher, showed, and ably explained, sections illustrating human physiology and pathology. Mr. F. M. Krause, F.G.S, demonstrated the difference in optical character of plagioclastic felspars (illustrated by sections of basalt, melaphyre, diabase, and porphyrite) and that of orthoclastic felspar (in sections of trachyte, phonolite, and felsite porphyry). Mr. Sidney Johnson showed transverse sections of eucalyptus and acacia, also transverse and longitudinal sections of cedar, pine, oak, mahogany, beech, and cane. Mr. W. Burbidge (by means of the oxy-hydrogen microscope lent by Mr. J. Oddie), Mr. A. Doepel, Mr. Figgis, the Rev. Mr. Binks and other gentlemen exhibited a miscellaneous collection of histological and entomological specimens.

NOTES ON THE GENUS UTRICULARIA.

By C. A. Topp, M.A.

The genus *Utricularia* is not a large one though widely spread, having representatives in all quarters of the globe, but it possesses special interest as being one in which all the species appears to be carnivorous, and the object of my paper is to direct the attention of the members of our club to the study of the Victorian representatives of that genus as they possess points of interest alike for the biologist, the botanist and the microscopist, and none of them have, I believe, been yet described or drawn in detail.

The *Utricularias*, of which 3 species are found in Victoria, belong to the natural order *Lentibularineæ* which is one of the series of bilabiate corolliflorae or synpetaleæ hypogynæ of F. Von Mueller. The members of the order (of which *Utricularia* is the only genus found here) may be recognised by the bilabiate personate corolla, lower lip produced into a spur, stamens 2 inserted at the base of the lower lip, 1 anther only on each stamen, the short style with bilobed stigma and by the capsular fruit having a central placenta bearing numerous minute seeds. The drawings I have made from the living plants will, I hope, illustrate all these characters. The generic mark of *Utricularia* is the two lobed calyx.

The three Victorian species are very easily distinguished.

U. flexuosa is an aquatic plant with linear much divided leaves and yellow flowers.

U. dichotoma and *U. lateriflora* both grow in damp peaty soil, but the former is a much larger plant than the latter, the stem being 6 to 12 inches high, and the flowers are borne in a pair at the top of the leafless stem, while in *U. lateriflora* the flowers vary from one to four, and form a spike on the slender leafless stem 1 or 2 inches high.

I have not yet found *U. flexuosa*, but it is said to grow in the swamps and back waters of the Yarra.

Neither of the other species appear to be common. I have found *U. dichotoma* near Lillydale and *U. lateriflora* near Oakleigh. The specimens of the latter from which the drawings were made, were gathered early in May, one plant was already in fruit, and one capsule had opened and discharged its seeds. Mr. French informs me that the other species flower much later, and with his usual kindness, he has given me some dried specimens of *U. dichotoma* showing the leaves and utricles, my own specimens not showing these organs. I may remark that Bentham describes *U. lateriflora* as leafless at the time of flowering. This does not agree with my observations. There are certainly no leaves on the stem nor close to it, but, as shown in the drawing, underground branches rise from the crown of the roots and bear at their tips minute leaves, a short distance from the base of the stem. Unless the soil for an inch round the plant is taken up, and then carefully washed away, these branches are detached and the plant would appear leafless. N.B.

The underground branches and petioles of all species of this genus bears numerous little bladders (whence the name of the genus). These bladders were formerly supposed to serve the purpose of floating the leaves, but, as they occur in species which are not aquatic, and as in the aquatic species the leaves will float without them, it is clear that this explanation is not adequate.

In *U. lateriflora* these bladders are very minute, being just visible to the naked eye ; they are in fact about $\frac{1}{50}$ inch in diameter, They present, however, a beautiful and complicated structure

under the microscope, as members will be able to judge for themselves, if they will look at the mounted specimens which I exhibit, and which have been prepared for me by Mr. Barnard, the well-known member of the Microscopical Society, with his usual kindness and skill.

I have also made drawings showing these utricles variously magnified, which will serve the purpose of showing their chief points of structure.

In *U. lateriflora*, the utricles are colourless, transparent, somewhat pear-shaped bodies mounted on a slender stalk as long as, or a little longer than, their own greater diameter. Their surface is marked with delicate wavy lines and small dots representing papillæ At the thinner end is a kind of snout, (called by Darwin the antenna,) which is bent down over a minute opening in the bladder. This entrance is protected by a valve opening inwards only by one free edge, which rests against a semicircular collar of several rows of small cells projecting into the bladder. Between the collar and the stalk on the outer surface of the bladder, are a number of curiously shaped papillæ or glands, formed apparently of three cells, the lowest being a truncated cone, the middle resembling a collar, and the top one a globe. These papillæ seem to take the place of the bristles observed by Darwin in the aquatic species. The bladder presents one remarkable difference from those described by Darwin; there is only one snout or antenna, not a pair. The inner surface of the bladder is studded with minute four-armed, glandular processes, each on a short footstalk. The arms are nearly equal and vary in position, from a cruciform shape to each pair being nearly parallel, the arms are of about equal length, (these differing from those described by Darwin), and each consists of a single cell. The vascular bundle of the footstalk of the utricle may sometimes be traced nearly round the outer edge of the bladder, and one branch runs along the ventral surface, to the point of the snout. This seems to indicate that the bladder is a modified leaf, that is, a leaf folded down the midrib, somewhat in the manner of a carpel.

The valve itself is said to be a rather complicated structure, but I have not been able to dissect it out, and examine it.

In *U. dichotoma* the bladders are much larger, being about $\frac{1}{8}$ inch in diameter, and minute points of structure could probably be more easily seen, and dissection would not be so difficult as in the smaller species. As I had, however, only dried bladders of this plant, I could not see much structure; prolonged soaking and very careful washing might make even these fit for observation. I could see that they resembled much more closely the *U. vulgaris* than did *U. lateriflora*, the antenna being slender and branched, and the opening to the valve being surrounded by bristles.

The researches of Darwin and Cohn show that the object of these bladders is to entrap prey. Both these naturalists and other observers found minute crustaceans and insects within the bladder, and they were even seen entering and afterwards swimming about inside, and subsequently decomposing. Time will not allow of me giving more than a very brief statement of the results of Darwin's observations and experiments. His conclusions are the following—

1. The valves are not irritable, but yield on gentle pressure, and close from their elasticity.

2. The bladders have no digestive power, but absorb through the quadrifid processes decaying animal matter.

3. It is not certain what is the inducement to the minute animals to enter.

N.B. Dr. Ralph has kindly directed my attention to an article by Professor Mosely in a recent number of *Nature*, describing how *Utricularia* actually prey on Vertebrates, namely, young fishes, thus completely turning the tables on herbivorous animals. As the fact is so curious and yet so completely proved, I will read an extract from the paper.

I cannot say that I have certainly seen in the utricles examined, remains of insects; but I have seen foreign matter inside the bladder, which did not resemble soil, and which in all probability was the remains of the harder part of some minute insect or crustacean.

Of course the actual process of catching could only be seen in the case of the aquatic species of *Utricularia*.

VICTORIAN FAUNA.

CLASS II.—BIRDS. Part 2.

By T. A. Forbes-Leith and A. J. Campbell.

202. Orthonyx spinicaudus. *Temm.* Spine-tailed Orthonyx.
203. Sittella chrysoptera. *Lath.* Orange-winged Sittella.
204. ,, pileata. *Gld.* Black-capped Sittella.
205. Cacomantis pallida. *Lath.* Pallid or Unadorned Cuckoo.
206. ,, flabelliformis. *Lath.* Fan-tailed ,,
207. ,, insperatus. *Gld.* Brush ,,
208. Mesocalius palliolatus. *Lath.* Black-eared ,,

209. Chalcites plagosus. *Lath.* Bronze Cuckoo.
210. „ basalis. *Hors.* Narrow-billed Bronze „
211. Scythrops Novæ-Hollandiæ. *Lath.* Channel-bill.
212. Plictolophus (Cacatua) galerita. *Lath.* Great Sulphur-crested Cockatoo.
213. „ „ Leadbeateri. *Vig.* Major Mitchell's or Leadbeater's Cockatoo.
214. „ (Eolophus) roseicappilla. *Vieill.* Rose-breasted „
215. Licmetis nasica. *Temm.* Long-billed „
216. Calyptorhynchus Banksii. *Lath.* Banksian Black „
217. „ solandri. *Temm.* Leach's „
218. „ funereus. *Shaw.* Funeral „
219. Callocephalon galeatum. *Lath.* Gang Gang „
220. Polytelis Barrabandi. *Swain.* Barraband's Parrakeet
221. „ melanura. *Vig.* Black-tailed „ (Rock Pebble.)
222. Aprosmictus scapulatus. *Bechs.* King Lory.
223. Platycerus Barnardi. *Vig. and Hors.* Barnard's Parrakeet.
224. „ zonarius. *Shaw.* Banded Parrakeet or Pt. Lincoln Lory.
225. „ Peunantii. *Lath.* Pennant's „
226. „ flaveolus. *Gld.* Yellow-rumped „
227. „ eximius. *Shaw.* Rose Hill (Rosella) „
228. Psephotus hæmatogaster. *Gld.* Crimson-bellied „
229. „ (var) xanthorrhous. *Gld.* Yellow-vented „
230. „ multicolor. *Temm.* Many-coloured Parrakeet.
231. „ hæmatonotus. *Gld.* Red-rumped „
232. Euphema venusta. *Temm.* Blue-banded Grass „
233. „ elegans. *Swain.* Elegant „ „
234. „ chrysogaster. *Lath.* Orange-bellied „ „
235. „ pulchella. *Shaw.* Chestnut-shouldered „
236. „ Bourkii. *Gld.* Bourke's „ „
237. Melopsittacus undulatus. *Shaw.* Warbling „ „
238. Calopsittacus Novæ-Hollandiæ. *Gml.* Cockatoo Parrakeet.
239. Pezophorus formosus. *Lath.* Ground or Swamp „
240. Lathamus discolor. *Shaw.* Swift Lorikeet.
241. Trichoglossus Novæ-Hollandiæ. *Gml.* Blue Mountain or Swainson's „
242. „ (Glossopsitta) concinnus. *Shaw.* Musk „
243. „ „ porphyrocephalus. *Dietr.* Porphyry crowned „
244. „ „ pusillus. *Shaw.* Little „
245. Chalcophaps Chrysochlora. *Wagl.* Little Green Pigeon.
246. Leucosarcia picata. *Lath.* Wonga Wonga Pigeon.
247. Phaps chalcoptera. *Lath.* Bronze-wing „
248. „ elegans. *Temm.* Brush Bronze-wing „
249. Ochyphaps lophotes. *Temm.* Crested Bronze-wing „

250. Geopelia tranquilla. *Gld.* Peaceful Dove.
251. „ (Stictopelia) cuneata. *Lath.* Little Turtle „
252. Leipoa ocellata. *Gld.* Ocellated Leipoa, (Mallee Hen.)
253. Turnix varius. *Lath.* Painted Quail
254. „ melanotus. *Gld.* Black-backed Turnix.
255. „ velox. *Gld.* Swift-flying „
256. „ pyrrhothorax *Gld.* Chesnut-breasted „
257. Pedionomus torquatus. *Gld.* Collared Plain Wanderer.
258. Coturnix pectoralis. *Gld.* Pectoral Quail.
259. Synoicus Australis. *Lath.* Swamp „
260. „ Diemenensis. *Gld.* Tasmanian „ „
261 „ sordidus. *Gld.* Sombre „ „
262. Excalfatoria Australis. *Gld.* Least „ „ (King Quail.)
263. Dromaius-Novæ Hollandiæ. *Lath.* Emu.
264. Eupodotis Australis. *Gray.* Bustard (Wild Turkey.)
265. Ædicnemus grallarius. *Lath.* Southern Stone Plover.
266. Hæmatopus longirostris *Vieill.* White-breasted Oyster-catcher.
267. „ unicolor. *Wagl.* Sooty „
268. Lobivanellus lobatus. *Lath.* Wattled or Spur-wing Plover.
269. Sarciophorous pectoralis. *Cuv.* Black-breasted „
270. Charadrius (Squatarola) Helvetica. *Linn.* Grey „
271. „ longipes. *Temm.* Australian Golden „
272. Endromias Australis. *Gld.* Australian Dottrel.
273. „ veredus. *Gld.* Asiatic „
274. Ægialitis monarchus. *Geoff.* Hooded „
275. „ nigrifrons. *Cuv.* Black-fronted „
276. „ ruficapillus. *Temm.* Red-capped „
277. „ bicinctus. *Jar. and Selb.* Double-banded „
278. Erythrogenys cinctus. *Gld.* Red-kneed „
279. Himantopus leucocephalus. *Gld.* White-headed Stilt.
280. Cladorhynchus pectoralis. *Dubus.* Banded „
281. Recurvirostra rubricollis. *Temm.* Red-necked Avocet.
282. Limosa melanuroides. *Gld.* Black-tailed Godwit.
283. „ uropygialis. *Gld.* Barred-rumped „
284. Tringa (Limnocinclus) acumiuata. *Hors.* Marsh Tringa.
285. „ (Schæniclus) subarquata. *Gmel.* Curlew Sandpiper
286. „ „ albescens. *Temm.* Little „
287. „ canutus. *Linn.* Knot.
288. Actitis hypoleucus. *Linn.* Common Sandpiper.
289. Glottis glottoides- *Linn.* Greenshank.
290. Tringa interpres. *Linn.* Turnstone.
291. Gallinago Australis. *Lath.* New Holland Snipe.
292. Rhynchæa Australis. *Gld.* Australian Rhynchæa (Painted Snipe)
293. Numenius cyanopus. *Vieill.* Australian Curlew.

294. Numenius uropygialis. *Gld.* Whimbrel.
295. „ minor. *Schleg.* Little „
296. Geronticus spinicollis. *Jameson.* Straw-necked Ibis.
297. Threskiornis strictipennis. *Gld.* White „
298. Ibis falcinellus. *Linn.* Glossy „
299. Platylea melanorhyncha. *Reich.* Royal Spoonbill.
300. „ flavipes. *Gld.* Yellow-legged „
301. Grus Australasianus. *Gld.* Australian Crane (Native Companion).
302. Ardea Pacifica. *Lake.* Pacific Heron.
303. „ Novæ-Hollandiæ. *Lath.* White-fronted „
304. Herodias alba. *Linn.* White Egret.
305. „ intermedia. *v. Hass.* Plumed „
306. „ melanopus. *Wagl.* Spotless „
307. Demiegretta Greyi. *Gld.* White Reef Heron.
308. Nycticorax Caledonicus. *Lath.* Nankeen Night „
309. Botaurus poicilopterus. *Wagl.* Australian Bittern.
310. Ardetta minuta. *Linn.* Minute „
311. Porpyrio melanotus. *Temm.* Black-backed Porphyrio.
312. Tribonyx ventralis. *Gld.* Black-tailed Tribonyx.
313 Gallinula tenebrosa. *Gld.* Sombre Gallinula.
314. Fulica Australis. *Gld.* Australian Coot.
315. Hypotænidia Philippensis. *Linn.* Pectoral Rail.
316. „ (Lewinia) brachipus. *Swain.* Lewin's „
317 Porzana fluminea. *Gld.* Spotted Water Crake.
318. „ palustris. *Gld.* Little „ „
319. „ Tabuensis. *Gmel.* Tabuen „ „
320. Cygnus atratus. *Lath.* Black Swan.
321. Cereopsis Novæ-Hollandiæ. *Lath.* Cereopsis or Cape Barren Goose.
322. Anseranas melanoleuca. *Lath.* Semipalmated or Magpie „
323. Branta (Chlamydochen) jubata. *Lath.* Maned „
324. Casarca tadornoides. *Jard.* Chesnut-coloured Shieldrake.
325. Anas superciliosa. *Gmel.* Australian Wild Duck.
326 „ castanea (punctata). *Eyton.* Australian Teal
327. Stictonetta nævosa. *Gld.* Freckled Duck.
328. Spatula rhynchotis. *Lath.* Australian Shoveller.
329. Malacorhynchus membranaceus. *Lath.* Pink-eyed Duck.
330. Deudrocygna (Leptotarsus) Eytoni. *Gld.* Eyton's Tree „
331. Nyroca Australis. *Gld.* White-eyed „ (Widgeon)
332. Erismatura Australis. *Gld* Blue-billed „
333. Biziura lobata. *Shaw.* Musk „
334. Larus Pacificus. *Lath.* Pacific Gull.
335. „ (Xema) Novæ-Hollandiæ. *Steph.* Jamieson's Silver „
336. Stercorarius Antarcticus. *Less.* Great Skua.
337. Lestris Richardsoni. Richardson's „
338. Sterna Caspia. *Pall.* Caspian Tern.

339. Sterna poliocercus. *Gld.* Bass's Straits Tern
340. „ frontalis. *Gray.* Southern „
341. „ Anglica. *Mont.* Long-legged „
342. Sternula nereis. *Gld.* Little „
343. Hydrochelidon hybrida. *Pall.* Marsh „
344. Sterna fulginosa. *Gmel.* Sooty „
345. „ anæsthæta. *Scop.* Panayan „
346. Anous stolidus. *Linn.* Noddy „
347. „ tenuirostris. *Temm.* Lesser Noddy „
348. Diomedia exsulans. *Linn.* Great Wandering Albatross.
349. „ cauta. *Gld.* Shy „
350. „ culminata. *Gld.* Culminated „
351. „ chlororhyncha. *Gmel.* Yellow-nosed „
352. „ melanophrys. *Temm.* Black eye-browed „
353. „ (Phæbetria) fuliginosa. *Gmel.* Sooty „
354. Fulmarus (Ossifraga) giganteus. *Gmel.* Giant Petrel.
355. „ (Adamastor) gelidus. *Gmel.* Great Grey „
356. „ glacialoides. *Smith.* Silvery-grey „
357. Pterodroma Solandri. *Gld.* Solander's „
358. „ (Æstrelata) Lessoni. *Garn.* White-headed „
359. „ „ leucoptera. *Gld.* White-winged „
360. Puffinus nugax. *Sol.* Allied „
361 „ (Nectris) brevicandus. *Brandt.* Short-tailed „ (Mutton Bird)
362. „ sphenurus. *Gld.* Wedge-tailed „
363. Daption capensis. *Linn.* Cape „ (Cape Pigeon)
364. Prion turtur. *Smith.* Dove-like Prion.
365. „ ariel. *Gld.* Fairy „
366. „ Banksii. *Smith.* Bank's „
367. „ vittata. *Forst.* Broad-billed „
368. Procellaria nereis. *Gld.* Grey-backed Storm Petrel.
369. „ (Oceanites) oceanica. *Banks.* Yellow-webbed „ „ „
370. „ (Fregetta) melanogaster. *Gld.* Black-bellied „ „
371. „ (Pelagodroma) grallaria. *Vieill.* White-bellied „ „
372. „ „ fregata. *Linn.* White-faced „ „
373. Pelecanoides urinatrix. *Gmel.* Diving Petrel
374. Pelecanus conspicillatus. *Temm.* Australian Pelican.
375. Graculus Novæ-Hollandiæ. *Steph* Australian Cormorant.
376. „ varius. *Gmel.* Pied „
377. „ leucogaster. *Gld.* White-breasted „
378. „ melanoleucus *Vieill.* Little „
379. stictocephalus. *Bon.* Little Black „
380. Plotus Novæ Hollandiæ. *Gld.* New Holland Darter.
381. Sula serrator. *Banks.* Australian Gannet.
382. „ cyanops. *Sund.* Masked „

383. Podiceps Australis. *Gld.* Australian Tippet Grebe.
384. ,, nestor. *Gld.* Hoary-headed ,,
385. ,, gularis. *Gld.* Black-throated ,,
386. Chrysocoma catarractes. *Bon.* Crested Penguin.
387. Eudyptula minor. *Bon.* Little ,,
388. ,, undina. *Gld.* Fairy ,,
389. Tachypetes aquilus. *Linn.* Frigate Bird (occasional).
390. Glareola grallaria. *Temm.* Australian Pratincole (occasional).

97. Read Menura for Monura.
132. ,, Campestris for Capestris.
154. ,, Chough for Cough.
188. ,, Sanguineolenta for Sanguinolenta.

ANECDOTES OF SEALS.

By T. A. Forbes-Leith.

Some years ago I was going down an arm of the sea in a boat, on the west coast of Scotland, with a fisherman, for the purpose of sea-fishing, when a seal put up its head and took a look at us. The fisherman said to me: "If you will sit perfectly still, I will bring the seal close up to the boat." He then began to whistle a tune, and up came the seal nearer, and took another look at us. This it did several times, being nearer the boat each time; and the last time it came up close to us, took a long gaze, and then vanished altogether; after which the fisherman said to me: "Do you know, sir, they are very fond of music; and I once caught one by that means. Myself and some others were in a boat near here, going as we are now, to fish. We had a fiddler with us, who was playing the violin, when, all of a sudden, a seal raised itself up out of the water, and appeared fascinated, going down from time to time and appearing again, till at last it came up and stood erect close alongside of the boat, when I threw my arms round it, and pulled it down into the boat. We then knocked it on the head."

The following anecdote was related to me by the chief mate of one our wool ships, who was, at the time of the occurrence, on the spot. But first, let me say that those who know anything about seals, must have remarked their wonderful eyes. When they look at you, one would be led to think that they were about to speak, after having, as it were, searched the inmost and deepest caverns of the regions of thought, and fathomed the depths of the mysterious and obscure seat of that wonder of wonders, the human mind.

A man who owned the salmon fisheries, or, I should rather say, rented them, a few years ago, on the far north-east coast of Scotland, had been much troubled by the daring depredations of a seal,

that lay in wait to capture the salmon as they entered his "stake nets." So, taking his gun one morning, he determined to put an end to the career of this aquatic pirate. For this purpose he seated himself on a rock, the sea coming close up to his feet, and the spot being within easy shot of his nets. He had not long to wait before the seal made its appearance, and like lightning dived again on seeing the enemy armed for murder. At intervals of a good many minutes, the seal re-appeared, each time making towards the nets to try and get a fish ; and each time it did so, up went the gun, and down ducked the seal, before it was well up to the man's shoulder. This having been repeated often, and lasting until both watcher and seal were tired, the seal at last appeared in the water, close to the fisherman's feet, and, raising itself erect out of the water, it raised its arms close up to his face, holding therein a baby seal ; at the same time casting its beseeching, searching, and liquid eyes full on his.

The fisherman said : "I sat for some moments spellbound, after which I shouldered my gun and went straight off home, being perfectly powerless to harm it, never again returning to molest that seal and its infant offspring."

CORRESPONDENCE.

Entomology.—I agree with the idea of your correspondent "Correa," in your last number, and think the following may be interesting to some of your readers, as showing the mildness of the present winter. On the evening of the 11th August, I was rather surprised at an apparently large insect flying to the gaslight in my room, from the open air. On capture, it proved to be a beetle of the family Elateridæ. Is not this an unusual occurrence for this time of year ?

"ELATER."

NOTE.

A correspondent draws our attention to the conspicuously small competition in exhibits of Australian birds at the late Intercolonial Exhibition, held under the auspices of the Victorian Poultry and Dog Society. He points out that there was an entire absence of Pennant's and Barraband's beautiful Parrakeets, Grass Parrakeets, and Finches, all of which are excellent and showy cage birds, thriving well in confinement. We have not space to insert the Prize List for Birds, but are glad to notice that Mr. E. Dombrain (F.N.C.), obtained the special prize for the best talking magpie in the Show. We quite agree with our correspondent that the special opportunities we possess in Australia for training talking birds demand special successes. We may add, too, that we possess special facilities for making scientific observations on the psychology of our parrots, which ought to elicit facts of high scientific importance.

Field Naturalists' Club of Victoria.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday, 8th September.

The President, Rev. J. J. Halley, occupied the chair, and there were about 50 members and visitors present.

Dr. O. Finsch, Sydney, wrote thanking the Club for his election as an hon. member. Mr. G. Holdsworth, Chilwell, Geelong, wrote for information about an insect pest which had appeared there, and forwarded specimens for examination. These proved to be a minute species of Hemipterous insect of the family Scutelleridæ.

The hon. librarian acknowledged the following donation to the library since last meeting :—"Proceedings of the Linnæan Society of New South Wales," vol. IX., part 2, from the Society.

The hon. secretary reported that the monthly excursion, held at Studley Park, was well attended, but that the results were rather poor, as on account of the ruthless destruction of trees and shrubs, natural history objects are becoming very scarce.

The following ladies and gentlemen were elected members of the Club :—Mrs. Eden Bage, Miss Smith, Miss Maude Smith, Rev. A. W. Cresswell, Messrs. R. Hall, A. Lukey, Jno. Melville, G. H. R. Osborn, D. F. Riches, E. M. Symonds, and J. Vievers; whilst three ladies and three gentlemen were nominated for election at next meeting.

Papers for future meetings were promised by Messrs. French, Best, and Dattari.

Dr. Dobson, M.L.C., brought under the notice of the members present the great want felt by botanical students of a handy work on Victorian plants. He stated that he had seen Baron von Mueller, Prof. McCoy, Hon. J. Service, and others, with regard to the best means of preparing and publishing such a work. He referred to the usefulness of a little work by the Rev. W. Spicer, on Tasmanian plants, in the form of a dichotomous key, and suggested that the Victorian publication should be in the same form. He was so strongly impressed with the need of such a work, that he was prepared to carry it out at his own expense, but thought that first the Royal Society might be asked to join this Club in urging the Government to undertake the work. He therefore moved a resolution embodying the above views, which was, after a few remarks from Messrs. Lucas and Watts, and the Chairman, carried unanimously. The President, Dr. Dobson, Mr. A. H. S. Lucas, and the Hon. Sec. were deputed to wait upon the Royal Society.

The hon. sec. (Mr. F. G. A. Barnard) drew attention to the great destruction of native trees and shrubs daily taking place in Studley Park, and suggested that some steps be taken to bring the matter more prominently under the notice of the authorities. It was

decided on his proposition that a deputation consisting of Rev. J. J. Halley, Dr. Dobson, Messrs. Lucas, Best, and the Hon. Sec. should wait on the Minister of Lands, and draw his attention to the matter.

Mr. Best mentioned the recent telegrams about the platypus, but pending further particulars, the question was postponed.

1. Dr. Lucas read a paper entitled "Notes of a Recent Trip to New Caledonia and Fiji.' He described the scenery of the coasts, and of the Rewa River which he ascended for 60 miles, and gave many interesting notes on the Natural History, especially the Entomology, of the Islands. He illustrated his paper by several cases of exhibits.

2. Mr. A. J. Campbell read a paper, "Notes on Lyre Birds," being a record of his observations with regard to these birds. He described the construction of the nest and exhibited a photograph of one recently discovered by him in the Gipps Land Ranges. He stated that the present close season did not afford sufficient protection to the birds, and that it ought to commence at least a month earlier.

3. Mr. Reader's paper on the "Early History of Botany," was postponed till the next meeting.

The principal exhibits of the evening were :—By Mr. F. G. A. Barnard, three orchids from Studley Park, *Pterostylis curta*, *Caladenia pulcherrima*, and *C. carnea ;* by Mr. D. Best, Australian Buprestis beetles ; by Mr. A. Borthwick, a fine mounted specimen of the Sooty Owl (*Strix tenebricosa*) ; by Mr. N. J. Caire, landscape photos of haunts of Lyre birds, and nest ; by Mr. A. J. Campbell, splendid pair of Lyre birds *(Menura Victoriæ)* with eggs, in illustration of his paper ; by Mr. A. W. Coles, skin of Python, from Queensland, also pair of King Quail (mounted) ; by Mr. P. Dattari, three orchids in bloom, *Caladenia latifolia*, *Pterostylis curta*, and *P. pedunculata ;* by Master Dombrain, Skins of needle-tailed swift, and flame-breasted robin, also nest of orange-winged sitella ; by Mr. C. French, diploma and gold medal awarded to him for insects exhibited at Amsterdam ; by Mr. J. H. Gatliff, eleven species of shells of genus *Ricinula*, including *R. biconica*, Victoria ; by Masters H. and R. Hill, two cases of lepidoptera ; by Mr. G. R Hill, barbed specimens of the sting-ray ; by Mr. T. Hyland, Valonia nuts from India : by Mr. T. A. Forbes-Leith, eight species of British birds—viz., the Knot, the Red-shank, the Land-rail, the Water-rail, Starling, Thrush, Black-bird, Ring Ouzel ; by Dr. Lucas, six cases of Lepidoptera, etc., (in illustration of his paper) ; by Mr. F. Reader, mounted New Zealand mosses, collected by Sir. J. Hooker, during the Antarctic expedition, also fungus, *Polyporus cinnabarinus*, in different stages of growth ; by Mr. H. Watts, 42 species of Microfungi, mounted for the microscope.

After the usual *conversazione* the meeting terminated.

[We have learnt since, that Baron von Mueller has made arrangements with the Government printer for the publication of a Dichotomous Key for Victoria, such as Dr. Dobson proposed to be prepared, under the Baron's own direction. The deputation to the Minister of Lands was received on September 18, and after drawing his attention to the destruction of trees, asked that they should be afforded more efficient protection, that the haunts of birds and insects might be preserved. Mr. Tucker promised to consult with the police department, and to ask them to provide adequate protection.]

EXCURSION OF THE FIELD NATURALISTS' CLUB

The usual monthly excursion of the Club took place on Saturday, September 13th, the locality being the district between Brighton and Cheltenham. There was a good attendance of members, including several ladies, who left town by the mid-day train for Cheltenham, whence they rambled across the heath to the Red Bluff near Brighton. Wild flowers were very abundant, the botanists of the party being kept fully at work noting the various species, the principal of which are mentioned below. The Entomologists had little to do, that beautiful beetle *Xylonychus eucalypti*, together with the butterfly *Vanessa Kershawi*, being almost the only insect life seen, it being so early in the season. Several fine larvæ of moths were however taken for rearing at home. Lovers of pond life also had opportunities for making captures, and altogether a most enjoyable outing was spent. The party returned to town by the six o'clock train. The following were the more important flowering plants seen :—*Gleichenia circinata*, *Ophioglossum vulgatum*, *Schizæa dichotoma*, and variety, *Pterostylis barbata*, *Sprengelia incarnata*, *Pultenæa paleacea*, &c.

NOTES ON TASMANIAN SNAKES.

By F. H. Reed.

Having read in the *Victorian Naturalist*, a paper on Victorian Venomous Snakes, by Mr. D. Le Souef, I thought it might be interesting to give an account of a few of my own experiments with snakes, and the conclusions I have arrived at.

I have noticed the same peculiarities of colouring in snakes as are mentioned by Mr. Le Souef, and am inclined to think that this is greatly due to the locality and nature of soil frequented by the reptiles. I have noticed that snakes inhabiting low, marshy ground

are much darker in colour than those inhabiting high, rocky, or sandy soil. Again, those in good condition are much brighter, with more glossy scales. The nearer they are to shedding their skins, the duller is their colour, and *vice versa*.

There is a common belief that snakes swallow their young when danger is near, but this I believe to be an error, having had snakes in captivity which have given birth to young ones, and I have done all I could to make the parent swallow them, but to no purpose. The female seems to have not the slightest natural affection for her offspring, she not being in the least degree more savage with her young than at any other time. But the little ones appear to have an idea of defending themselves even when a day old, for I have handled them, and upon pinching them they would immediately flatten out their heads and make an attempt to bite.

From observations, I am inclined to think that none of our snakes use their venom fangs to destroy their prey, but that they catch and swallow it alive. They are also cannibals, for I have had them eat each other when in captivity. But they cannot kill one another by means of their venom. While capturing them, I have seen them repeatedly bite themselves most viciously, but have never known one to die from that cause ; because, I think, snakes are cold-blooded and the venom has no fatal effect upon cold-blooded creatures, but on the contrary, the hotter the blood the sooner death ensues.

There is a great difference of opinion as to the number of species of snakes found in Tasmania. I am only sure of four, viz., *Hoplocephalus curtus* (Tiger Snake), *H. superbus* (Copper-head), *H. flagèllum* (Whip Snake), and *H. coronoides* (White-lipped snake)* I have heard, on reliable authority, that there is a pale green snake about the size of the whip snake, or a little larger, which is found near the top of the mountains, but I am not in a position to say whether it is a different species or not. I also think we have *Diemenia superciliosa* (Brown snake). Once I saw a snake killed which, as far as I can remember was exactly like *Diemenia superciliosa*, but it was some time since.

I have never seen a snake six feet long. The longest I have seen was a Tiger snake, five feet two inches when killed, but alive it looked nearly seven feet. I have also killed a female snake far advanced in young, which upon being opened revealed fifty-two little ones ; in another example I counted forty-eight. Snakes seem to be very prolific, and the wonder is that they are not more plentiful. This, no doubt, would be the case but for their enemies, amongst which are the following, native cat, occasionally the domestic cat and dog, *Aquila audax* (eagle), the various falcons and hawks, *Cracticus cinereus* (butcher bird), *Strepera fuliginosa* (sooty crow-shrike), and last, but by no means the least destructive, a kind of fluke which seems to kill the snakes during their winter sleep, by

*Krefft only gives three, not having found the Whip Snake.—ED.

eating away their liver. I have lost several this way. To the naked eye the flukes look like exceeding minute scales with tiny horns. They are generally of a dark colour

The native cat I believe to be all but venom-proof. Mr. Le Souef states that a native cat lived an hour and a half after it had been bitten by three large tiger snakes. I have seen a dog die in three minutes after having been bitten by one. I shall, at some future time, give an account of three different native cats which were bitten and the results.

I am of opinion that the venom of all Australian snakes is of the same composition, but not being able to analyse or to get an authentic analysis, I can only say so from having watched its effects. One conclusion I have arrived at is that the venom becomes more deadly by being exposed to the air. I therefore think that the first thing to try and do in cases of snake bite, is to localise the venom, either by ligature or some other means. To lacerate the part bitten, or stimulate the action of the heart by means of alcohol, &c., is to my mind suicidal. I quite agree with cutting the bitten part clean out immediately ; a piece the size of a large pea would be sufficient.

My theory of snake bites is the following :—The venom, as soon as it is injected into the victim is taken up by the absorbents (lymphatics), from thence into the small blood-vessels, and so on, till it reaches the lungs, where it is brought into contact with the air and has its deadly effects consummated. The effect of the venom appears to be to coagulate the blood and darken its colour. As bearing out this theory, I give the following few facts out of a number :—Where the bitten part has been well lacerated, the animal has had a harder struggle for life than when the antidote is merely applied. (Perhaps here I ought to mention that I possess an antidote to snake bites ; experiments with the same I shall be happy to give in detail in some future paper.) Again, the hotter the blood of the animal at the time bitten, the sooner death occurs, (of course, the greater the heat of the blood the quicker the pulsation of the heart.) Then the effect on the system, when venom extracted from the snake is injected under the skin by means of a hypodermal syringe, is different from that of a proper snake bite. In the former case, the symptoms are something like the following, differing slightly in different individuals. First of all, the pupils of the eyes become dilated, heart intermittent and quick, great uneasiness and evident suffering and pain. I have seen an animal lash its tail and utter cries from pain especially upon being touched. There is, too, sickness accompanied with purging. The animal retains consciousness to the end. While the following are the symptoms of ordinary snake bites:—Pupils dilated, heart intermittent, high sickness and slight purging sometimes, a great dislike to all exertion which ends in a kind of stupor, with no sense of pain at the last. I have cut a

cat's flesh to the bone while still alive, but it showed not the slightest sign that it felt it. Loss of power in the hind quarters also occurs.

I have never yet been able to find anything to cure the injected poison. I have been informed by a gentleman, whose word I could depend on, that aboriginals will, upon being bitten, if water be near, go and submerge as much of their bodies as possible, and that they not unfrequently recover, although sometimes very ill. There is also living near me a person who has a little Skye-terrier dog that will destroy snakes although it gets thrashed for it, but always after a combat with a reptile it makes off to the nearest water, and nothing will induce it to come out. He also says he has observed the dog show signs of illness by being sick and losing all appetite. The dog will remain in the water for over a day sometimes after the snake has been seen to bite it. The only way I can account for the water having a beneficial effect is that the coldness deadens to a certain extent the absorbents, so that the poison is not so quickly absorbed and not in such large quantities, the heart also does not pulsate nearly so fast, which enables the system at length to overcome the virus.

It is a popular belief that the Iguana, upon being bitten by a snake, immediately eats some herbs and recovers, but this, I believe, to be wrong. I doubt if the fangs of a snake can penetrate the hard skin of the Iguana., and if they could it being cold blooded the venom would take no effect.

Catalogue of Victorian Fauna.

VERTEBRATA: Reptilia.

By D. Le Souef, Assistant Director of Zoological Society of Victoria.

Order—OPHIDIA.

A. Innocuous Colubrine Snakes.

Family—Typhlopidæ.

Genus.	Species.	Common Name.
Typhlops (Schndr.)	*Preissii* (Schndr.)	Preiss's Blind Snake.
T.	*bicolor* (Schmdt.)	Schmidt's ,,

Family—Dendrophidæ.

Dendrophis (Boie)	*punctulata* (Gray)	Green Tree Snake.

Family—Pythonidæ.

Morelia (Gray)	*variegata* (Gray.)	Carpet Snake.

B. Venomous Colubrine Snakes.

Family—Elapidæ.

Diemenia (Gray)	*superciliosa* (Fisch.)	Common Brown Snake.
D.	*aspidorhynca* (M'Coy.)	Shield-fronted ,,
D.	*microlepidota* (M'Coy.)	Small-scaled ,,
D.	*reticulata* (Gray.)	Grey Snake.
Pseudechys (Wagler.)	*porphyriacus* (Shaw.)	Black Snake.
Furina (Dum et Bibr.)	*bicucullata* (M'Coy.)	Two-hooded Furina.
Hoplocephalus (Cuv.)	*curtus* (Schl. sp.)	Tiger Snake.
H.	*superbus* (Gunth.).	Copper-headed Snake.
H.	*flagellum* (M'Coy)	Little Whip Snake.
H.	*coronoides* (Günth.)	White-lipped Snake.
H.	*signatus* (Jan.)	Black-bellied Snake.
Vermicella (Gray)	*annulata* (Gray.)	Black and White Ringed Snake.
Acanthophis (Daudin)	*antarctica* (Shaw. sp.)	Death or Deaf Adder

NOTES ON THE PLATYPUS.

[From a paper read before the Field Club, in October 1880, by Mr. F. J. Williams. They are founded on observations of the haunts and habits of the animal by the author, extending over a period of 28 years.—Ed.]

Mode of Life.—Its native element is the land, and it visits the water only in quest of food; it swims like a duck. On land it crawls on its belly, over logs or on the banks of muddy creeks. I have, however, occasionally seen them in a partially erect position, though they generally crawl or run lizard-fashion on the ground. When on land they double up the webs of the fore-feet, and then the long claws have a firm hold on the ground, and they can crawl at a good speed. Their home is on the land; the nest is not more than nine inches or a foot below the surface of the ground. From

it they may have one or two passages to the surface, and also one which opens on the face of the bank of the creek or river which they frequent. The entrance to this last is sometimes above and sometimes below the water-level, according to the season of the year, and consequent height of the water. The Platypus generally selects a hole left by the root of a tree which has decayed away ; it enlarges this hole, and makes its way inland and upwards till within a few inches of the surface : it then extends the burrow on all sides to form a cavity large enough to build a good-sized nest in. The nest is composed of moss, leaves, dried grass, etc., and in this warm and comfortable abode, the creature spends most of its time, sleeping, rolled up like a ball. The male when attacked, will fight with a will, striking out with his hind feet, each of which has a long spur, with which he can inflict a nasty wound. I have known such wounds to take a long time to heal.

Food.—Morning and evening are the principal feeding times. They then leave their holes and paddle up and down the sides of the stream looking for food in the mud, much in the same manner as a duck. They live on worms and small insects, but I have never found a fish inside one at any time. In fact they cannot swallow anything at all large. At the slightest sound they dive or swim under water at a great pace, and for long distances at a time. Hearing and sight are so sensitive, it is not easy for an inexperienced sportsman to shoot them while feeding. I have often found them on land on a wet night, when they were doubtless looking for worms, which would then come to the surface.

How to Keep a Platypus.—I have frequently had them alive, and can see no reason why they should not be kept for years and tamed, inasmuch as they have the largest brain of almost any animal I have dissected for the size and weight of the skull. I had a very fine specimen some few years ago, and kept it for some weeks, until it began to get tame, and would come out of its nest into the water, and swim and dive about in the presence of strangers. Mr Wilson, the proprietor of the *Argus*, bought it from me, and the further history is not known to me.

I will now proceed to describe the method I took to keep them alive. I first had a large water-tight box, say 4 ft. square and 3 ft. deep, with rocks, and projections in it, and filled it with water. In this box I put worms, bread crumbs, boiled eggs cut fine, and small insects, as I could get them. And leading from this box just at the surface of the water I made a passage to another box, filled with moss and fine grass, and after he had fed in the water, he would pass into the other box and coil himself up, and go to sleep. Therefore any person trying to keep them alive, must let them have plenty of water to frequent when they choose to use it. And they always prefer to feed in the water, and after having fed, they require

a good, soft bed and plenty of warmth,—they will then sleep most of the day. I have seen them put into a cask of water, and I expected to live like a fish, but, of course, they soon got drowned, like any other land animal, for they only frequent the water for food.

Reproduction.—I cannot prove or describe how the Platypus brings forth its young, but will give the result of my observations on it for some years past. I have examined the female during most months of the year, but do not remember getting one in the month of October, which is the month I think they commence to breed. This leads me to believe that they are away from the water during this month, that is, the females, as the males are to be found at all times. In the month of November, they are as plentiful as ever, and then show eggs of a large size, placed in the inside similar to birds. Two are largely developed, one on each side, the others are very small, which leads me to believe that only two are matured each year. I have noticed that where you capture one young one, you will generally see another about the same size. I have never been able to find them very small, but the largest sized egg I have seen is about the size of that of a pigeon, having no appearance of a shell, only a thick membrane, something similar to that of a lizard's egg. In the month of December, I have again examined them, and have found no large eggs inside, but an udder full of milk, yet no appearance of teats outside, although I have examined them very closely, and squeezed the udder very hard, to see if I could force the milk through the skin, but could not do so. I have skinned the animal, and taken out the udder, but have not been able to find out how the milk could be given by the mother to the young, but after taking out the udder and cutting it, a large quantity of white milk can be squeezed out.

My experience teaches me that the Platypus builds a warm and secure nest fit to hold eggs, or rear the young ones in. It has eggs inside in November, in some localities it may be earlier, or later, and its body contains milk fit to nourish the young.

TRIP TO NEW CALEDONIA AND FIJI.

By Dr. T. P. Lucas.

(Read 8th September, 1884.)

The passage by sea was rough. Despite all courage and science, I had to acknowledge the debasing, demoralizing tendencies of animalism. At length far before us we eyed white breakers. Yes, man might empty thousands of tons of rubbish into the South

Pacific, and yet not be able to create a single island. The Infinite Intelligence magnifies His power by utilizing microscopic infinitesimals. At first, below the tossings of the mighty billows they grow and multiply. And as unnumbered millions they continuously increase and instinctively exist to the one end and purpose. As atoms are secreted their capacity enlarges. As years roll by, their strength increases. Until the minute polypes tower their heads, and over the graves of myriads of the dead, bid defiance to the waves of the sea. Commenced in weakness they abide in strength. As the ocean bed sinks, they make haste to rise to the low water mark. Until in one place they become mighty protective barriers, outside the ancient volcano. In another they form low flats and coral sands. And now for miles and miles are stretched before us the white foam breakers. These are a certain sign of rocks ahead. They are the barrier reefs protecting New Caledonia. The waves ever rushing on would, as in Old England and Australia, wear away the land from the coasts. But it is not so to be, the barrier reef bids defiance. Without all is fight and fury. Within all is calm and placid. The waters are stayed and tossed back again. The winds must leap over as with a truce. We sail past. The sun shines. Nature smiles. Rainbows arch the coral reefs. Brilliant hues of golden, purple and green festoon the feathery spray. Snow-white and dove-like birds skim over the waters. The thunder of the battle rages. The powers of Nature struggle in one unceasing strife. And all to the one end. All illustrate the one purpose. The unity of the design. At a respectful distance we skirt the coral reef. At length there is a break in the barrier. The ocean with all its force of waters could not break down the reef. The polyps, grown within the shelter of its own breast, bid defiance to the breakers. Islands surrounded by an impenetrable reef would prove a flaw in the designing. These lovely ocean resting places would be almost useless, excepting, and that at great risks, to primitive man. And so a new factor comes in. A stream of fresh water pours from the land, kills the coral zoophytes, and prevents fresh growths, and thus opens a channel to the ocean. We pass through the channel, and under the care of a French pilot, make Noumea.

Our time here was limited. I made the best of it by rising at 5 o'clock in the morning. Thus, I was ready to avail myself of the first rays of the morning sun at 6 o'clock. In the topics, all the year round, the daylight lasts from 6 in the morning to 6 in the evening. Proportionately as we travel North or South, the days lengthen and the nights shorten, or *vice versa*, according to the season of the year. In Lerwick, in the Shetland Islands, at the height of Summer the night is only about one hour's duration. But in Winter, darkness sets in at 1 o'clock in the afternoon of the shortest day.

With the dawn of day, the blue butterflies were on the wing. The *Lycæna phœbe* and varieties of the *Lycæna Bœticus* were numerous. Both species occur in Melbourne, and doubtless in Australia generally. I also found them in Fiji. What appear to be varieties of Bœticus are very many and distinct. Wild flowers were in profusion. The *Verbena Bonoriensis*, a cottage garden favourite, was in full bloom. *Lippia nodiflora* edged damp places. *Scoparia dulcis*, *Convolvulus parviflora*, *Cyathula geniculata* and many others, told that we were coming to the tropics. In the gardens were many very gay flowers. In the cultivated groves many fragrant, aromatic shrubs and palms. Varieties of Cotton plants, beautiful Leguminosæ, but most enchanting of all was a large *Ipomœa*. It was some four inches in diameter, and of a most delicate sky-blue. It was a beautiful flower. These flowers attracted several butterflies. Three or four species of white (*Pieris*) were very active. *Danais*, large and small, lazily played, until pursued, when they became fleet of wing and instinctively cunning. Small sulphur yellow *Terias* flitted among the scrubby grass. Gaudy mazarine blues winged their way among the high foliage. A beautiful blue *Papilio* was not in season. It is peculiar to New Caledonia. Another species is peculiar to Fiji, and another still to Samoa. I took a few specimens of the *Acræa Andromache*, a semi-transparent lace-like butterfly. The species is found in Australia, as far south as Sydney. I also took it in Fiji. The *Deilephila pulchella*, Crimson speckled Footman, a moth found at Melbourne, throughout Australia, in Japan, Southern Europe, and in England, was very common. I also found it in Fiji. At light at night, I caught the Oleander Hawk Moth, also a rare English type, but with the same wide range. I also secured four specimens of a most delicate small emerald moth, the wings bordered with dark red. In the woods, I found the *Melaleuca leucodendron*. It has a white, paper-like bark, and is probably the last type of Australian gums to the Eastward. They extend much further North, many species being found in the South of New Guinea. I also noticed many types of Australian shells, Cardiums, Pectens, Pectunculus, &c., interspersed among Cones, Cowries and others purely tropical. Thus the zone of Australian types would appear to extend to New Caledonia on the East, and to South New Guinea on the North. The species, as giving a distinctive type feature, do not extend to Fiji. The *Acacia Farnesiana* has golden tassels or heads of flowers, reminding one of a species so common around Melbourne in the Spring. The sensitive plant, *Mimosa pudica*, was very rank. It cannot be mistaken. As rapidly as you touch its leaves, they curl up as if dried and withered, in a short time they again unfold before the morning sun. In Fiji, where it is said to have been introduced, it destroys the grass and herbage with which it comes into contact. The *Lantana* is committing even worse ravages about Noumea. It is also said to be an introduced

shrub. It seems to eat up or destroy everything that comes in its way. I sought to get to some trees in a wood, but failed to force a passage through this impenetrable hedge. The flowers are very beautiful and varied, exhibiting every variety of golden, yellow and red. Strange to say, cultivated forms of the species do not spread in like manner. Not merely because of the lack of fruit, but also because they are not so prolific in rooting runners and offshoots.

We left New Caledonia, and steamed through a newly discovered passage, a deep gorge between high, rocky headlands. The scenery was grand and rugged. The rocks were mostly of a red colour, and nearly devoid of vegetation. Nickel and copper mines are worked by English or Australian companies. Here and there mountain torrents, lit up by the sun's rays, appeared as sinuous silver lines on the dark rocky background, or rushed as waterfalls over the deep precipices. On low ridges were pole like pines, in weird and solemn solitude. In four hours we had passed New Caledonia, and after $3\frac{1}{2}$ days further steaming, we sighted Kandavu, the first of the Fijis, and soon after came in sight of Suva, the capital This is situated on the large island Viti Levu. The scenery is grand. The sun was just rising, and scattering the fleecy mists from the mountains. Purple shadows still hung on the sides of the hills. The golden rays of the morning lit up the coral reefs. Colours of every hue danced on the waters. Gentle ripples played upon the deep. Genial sunbeams filled the atmosphere, and lit up the face of Nature with life and beauty. Here and there were gentle undulations ; yonder and afar were ranges of hills ; and in the background lofty mountains, high peaks, and bold headlands stood out conspicuously in the distance. On nearing the shore, the whole landscape presented an appearance of glorious greens, every shade and hue combined in most artistic and pleasing effect. Ten thousand times ten thousand dew-drops lit up with silvery light presented a scene not soon to be forgotten. The very air was balmy and fragrant. The woods presented the brightness of the best kept hothouse vegetation.

But we near the port. The ship is soon besieged by a host of dark natives, naked, excepting a handkerchief or sulu round the loins. Nearly all had deep scars on the back or limbs, and some on the breast. This is done in bravado to shew pluck. The companions chaff and dare the boy to slice down his flesh, or to allow others to do the same. And the flesh is gashed, long and deep. Then the wound is kept open by irritants, and so heals with a broad scar. We often hear of cruelty to animals. Such torments would kill white people. We can only reason by analogy. The Australian natives are lowest in the social scale of the Southern Hemisphere aborigines. With a blunt stone they can open the abdominal cavity, extract the uterus, and in a week nothing but a scar will remain to tell the tale. Little or no pain comparatively. No severity of nervous shock. No bringing down to death's door. The lower in the social scale, the

less difficulty in bearing pain. Wounds hardly appear to trouble the South Sea Islanders, they heal so quickly. Parturition descends to the brute level. In a word, the more civilized and refined socially and intellectually, the more keen the sensibilities to pain. And *vice versa*. Draw the argument further. Drop from reason-endowed savage man to the simple instinct-endowed brute. If the sensibility to pain be so dull in savage man, as compared to refined and civilized man ; how much more dull must it be in the non-reason-endowed brute, as compared with the reason-endowed savage. And all Nature bears out the correctness of this theory. Crabs, spiders, insects, &c., lose their legs, arms, claws, and apparently without inconvenience or discomfort. A worm is cut into two, wriggles and becomes two creatures instead of one. In fact, pain is not a cruelty inflicted upon Nature by a selfish Creator. It is an animal self-preservative and a moral refining attribute. It is developed only in proportion as it is needed for the protection and well-being, or for the intellectual and spiritual development of the creature, and is abundantly counterbalanced by the pleasures and enjoyments of existence.

The Fijis are mostly of volcanic origin. The soil is deep and rich. The vegetation everywhere is rank and luxuriant, Trees of numerous and divers-shaped leaves vary the scene. Limes, lemons, and shaddocks grow wild, and in the richest profusion. Cocoanut palms stud the sea coasts. Bananas are cultivated in great variety. The bread-fruit tree is plentiful around the native villages. Numerous varieties of *Hibiscus* adorn the native homesteads. Many wax-like white flowers, arboreal and herbaceous, please the eye and perfume the air. Here wedding bouquets could be quickly arranged from Nature's labyrinths. A combination of aromatic odours and spotless white. Life here lives rapidly. Origin, existence, death, and decay follow each other in quick succession. Pyrale moths in multitudes frequent the low and swampy ground. Up they rise as we carefully step over the grassy tussocks. Here is a large-sized specimen, with club-shaped patterns printed on the front wings. There a delicate white plume. There a golden orange. There a pearly white. There a black chimney sweep. And there a minutesimal, patterned like a pheasant's tail. Tussocks of ferns and reed-like plants give shelter to silvery y's, rich orange, dark brown, wainscoat marbled, and other species of Noctuæ moths. While beautiful Euplœa butterflies, and brown and blue Danaidæ gracefully play among the flowers.

Anxious to see the interior, and there being no roads in Fiji, I had to follow the example of all explorers and avail myself of a water way. I elected to ascend the Rewa river. This I did, as far as the mountains. The river is broad, and in some places deep. Sharks and dog-fish lurk near the mouth. Fresh-water species are found higher up, and often make a meal of the natives when bathing. Fish swarm. A species of lobster is highly prized by the natives. Fresh-

water mussels of different species abound ; and heaps of shells remind one of the shell mounds of primitive man. Bamboos come floating down the river. At first as we ascend the banks are flat. This country is the seat of the sugar industry. A splendid climate and soil for the same, but not I think at present likely to make the fortunes of adventurers. All social and political matters are at sixes and sevens and in one vast unrest. I sailed up the Rewa in a native canoe, with two Fijian boys. We passed a beautiful banyan tree. Its branches covered nearly half an acre. Within was a spacious reception hall, such as might have gladdened the hearts of Hereward or Robin Hood. Branches and trunks intertwined in all directions. I had no difficulty in scaling these natural ladders. Delicate orchids, reminding one of the lily of the valley, grew in dense clusters. Luxuriant polypodies, graceful aspleniums, grass-like Schizæas and other ferns, hung from the crevices. Delicate and choice clubmosses waved in the breeze. In fact, this magnificent tree was one mass of vivid green. It was loaded with flowers, ferns, clubmosses, lichens, mosses, and fungi. Beautiful parrots lodged in its branches. Gentle pigeons chose its shelter for a resting place. Beneath and around were their feeding grounds, the sugar cane fields, and bordering copse. Two species of ants swarm in Fiji. You shoot one of these honey-feeding parrots, and lay it down on a table, or hang it up suspended by a string. In a few minutes its mouth is full of ants sucking the sugar juice as it drops from the everted crop. You catch some lovely moths, put them in your collecting box, and in a few minutes they have disappeared ; picked to pieces by swarms of ants as minute as a pin's head. You seek to avoid the recurrence of this misfortune, and pin a number of specimens in an air-tight box. In a day or two you open your box to put by more specimens, and oh, sorrow, all are one mass of mould. You go to a copse, and beneath the pleasant shade of overhanging trees you watch the thick underscrub. Before you is a moth, with wings set and at rest. Oh how fine. Here is a rarity. Take care. You advance cautiously. You strike. The moth remains on the leaf. Puzzled you look, and lo, the glorious catch is a delusion. The specimen is dead. But agglutinated to the leaf, and curiously patterned by a prolific and hardening fungus. No ants seem to have pluck to attack. No spiders appear to covet the meal. And there in the midst of rapid decay, this moth remains mummified. I saw several moths thus attacked and embalmed.

As we approach more hilly parts, steep cliffs with dripping water, give homestead to trembling maidenhairs, two species very common. Here and there waterfalls delight the eye and cool the atmosphere. Graceful tree ferns flutter their fairy-like fronds in the breeze. Slender palms nod their waving crests, or give forth the aroma of curious and beautiful clusters of flowers. Black green hymenophyllums stud the damp ground. Or the more delicate ones cover

the face of rocks, or cling gently to the trunks of trees. Sphagnums, hypnums and jungermannias form mossy beds, which are the fairy homes of tree orchids, lycopods, and lovely ferns. As we follow the rippling brook, and jump from stone to stone, fresh forms continuously meet our gaze. Tall and slender tresses of orchids bend over the stream. Erect and wax-like coloured spikes seek shade in the dense undergrowth. Most delicate habenarias and allied genera tempt a patient search. Vines and convolvuluses and a host of creepers make locomotion difficult and dangerous. Rubi, with their thorn covered branches, tear the clothes and the hands. Tall tree-like nettles, by their grace and assumed innocence beguile and punish. Keep off, savenaki, savenaki, cries the black attendant. You brush past, thinking you've escaped the danger, when a host of stings fall upon you. Alas, to make themselves felt after you believed yourself safe. One sea captain professed to be very bold. He got a bunch and carried it in his hat. Very soon his face gave indications of a coming storm. Plucky and proud, he held back his feelings. But ere long, little streams of blood began to trickle down his temples, And the proud captain had to yield, and promise never again to play with Nature's gay deceivers. Scratched with brambles; stung by nettles; a mustard poultice along the neck and back, through a multitute of minute insects shaken from fronds of the large woody ferns; hung and struggling in matted labyrinths of vines and creepers, slipping and falling on wetted clay, and yet lured on by the ever changing scenes of this earthly paradise. With one breath shouting for joy, with the next swearing with vexation. At one moment making headway, the next hanging and helpless. Now picking bunches of some new fern, then prostrate and bruised in the midst of it all. Perspiration poured off like a river. One moment striving to sing with joy, the next panting and struggling for breath. But eventually, patience and perseverance reward the effort. As I crept up this bewitching dell, new trophies continually rewarded the struggle. Creeping polypodies, leathery and pinnatifid aspleniums, most glorious selaginellas, pretty grasses delighted the gaze. Many varieties gracefully adorned the trunks of the woodland trees. Others sought the dark shelter of the dense undergrowth.

The exquisite gem known as the God's Fern spread its luxuriant wreaths from limb to limb, and from tree to tree. My native boys caught the spirit of the inspiration. They quickly sighted new forms, and cat-like, sprang up the tall tree trunks to secure valued specimens. I was bewildered. Lost in amaze and wonder. But oh, with riches come troubles. No sooner gathered than the beautiful ferns curl up and wither and die. 'Tis useless to seek to make a fairy bouquet. You must carry a portfolio, and pass the ferns at once into your botanical press. But oh, what a pile! and all needing to be changed every few hours. If not, they become specimens of mould and moisture. Beautiful fairyland. In its re-

cesses shades of beauty and peace. In its open glades floods of sunshine and glory. Beautiful dragon-flies dance over the babbling brook. Gay-bodied flies or gentle bees hum in time to its peaceful murmurs. Swallow-tailed moths disturbed from their silent day-dreams soar to the trees for a safer shelter. Pretty birds chirp, and golden pigeons bark like dogs in the branches overhead. Crimson-winged bombyces feed on the choicest fruits. Delicious perfumes gladden the senses, lovely fairyland delights the heart. But, ladies and gentlemen, words would fail to pencil the landscape ; imagery would be futile to reproduce the scenes. And so, till next we meet, I can but wish you pleasant dreams, and snatches of ideal enjoyment from this earthly paradise.

ANIMAL INTELLIGENCE.

Just now the subject of Animal Intelligence is receiving a severely scientific, and therefore hopeful, treatment at the hands of Dr. G. J. Romanes. To this eminent Biologist, well-known for work in comparative physiology, Darwin made over "all the notes and clippings" on the subject which he had been collecting for forty years. This mass of material formed a substantial basis of facts ; and weekly almost in "Nature" appear guaranteed observations from nearly all parts of the world. Dr. Romanes' first volume has been published in the International Scientific Series, and will be probably soon followed by another

The intelligence of some groups of Vertebrates can be better studied in Australia than anywhere else. Not a word occurs in Dr. Romanes' book on the intelligence of the Platypus or Echidna, and a page suffices for the marsupials. It would be a great gain to science, (and incidentally to the pages of the "Naturalist,") if squatters and other country readers of this journal could supply well-authenticated instances of "sense" shown by any of these creatures. As the lowest mammals, their minds are of particular interest Tamed, and so trained, individuals would be most likely to furnish such instances.

Again, the *education* of parrots *from early infancy* is practised by numbers in this colony, and is impracticable in Europe. Careful observations, soberly narrated, would yield information which those working at home would thank us for extremely.

We shall be very glad to receive and publish any such facts which might throw light on this fascinating and really important subject.—Ed.

Field Naturalists' Club of Victoria.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, Melbourne, on Monday evening, October 13th, 1884.

Mr. T. A. Forbes-Leith, vice-president, occupied the chair, and about sixty members and visitors were present.

Correspondence was read from the Minister of Lands, stating that instructions had been issued to prosecute persons destroying trees, &c., in Studley Park. From Mr. A. J. Campbell, suggesting a camping out expedition on Prince of Wales' Birthday, at the Olinda Creek, near Lilydale. It was decided to form a party as proposed.

The hon. secretary reported that the monthly excursion held at Cheltenham was well attended, and the members fairly successful in their search for specimens.

The hon. librarian stated that the committee having decided to add some works of reference to the club's library, he would be glad to receive suggestions as to suitable books.

Dr. Dobson announced that as Baron von Mueller had undertaken the compilation of a students' Victorian Botany, the proposed deputation to the Royal Society had been postponed for the present.

The following ladies and gentlemen were elected members of the club :—Miss Halley, Miss E. Halley, Miss Hood, and Messrs. C. Chandler, Wm. Patterson, and G. Rose.

Papers for future meetings were promised by Messrs. Best and French, "Notes of Trip to Mulwala;" by Mr. H. Watts, "On Staining Vegetable Tissues;" by Mr. F. M. Reader, "Notes on the Phanerogamous Plants of Studley Park."

Papers read—1. Mr. Reader gave a very interesting paper "On the History of Botany before the time of Linnæus," in which he traced the growth of that study from the earliest times, and mentioned the various writers who had left records of their work.

2. Mr C. French contributed the fifth part of his paper on the Orchids of Victoria, in which he described the following species :—*Diuris sulphurea*, *D. pedunculata*, *Cryptostylis longifolia*, *Orthoceras strictum*, *Prasophyllum elatum*, and *P. flavum*, and exhibited dried specimens of them.

3. Dr. Lucas read the descriptions of the Eggs of seven species of birds, recently obtained by him, and hitherto undescribed, being as follows :—Moth-plumed Podargus (*Podargus phalanoides*); 2. Marbled Podargus (*P. marmoratus*); 3. Red-vented Parrakeet (*Psephotus hæmatorrhinus*); 4. Black-capped Sittella (*Sittella pileata*);

5. White-winged Petrel (*Œstrellata leucoptera*); 6. Australian Tippet Grebe (*Podiceps Australis*); 7. Straw-necked Ibis (*Carphibis spinicollis.*)

The principal exhibits of the evening were—By Mr. F. G. A. Barnard, orchid in bloom, *Caladenia suaveolens*, found near Melbourne, also botanical specimens from Pyramid Hill ; by Mr. A. Borthwick, 20 species of Victorian birds recently shot at Olinda Creek ; by Mr. A. J. Campbell, a clutch of five kestrel's eggs, taken from a deserted crow's nest ; by Mr. G. Coghill, ten species of orchids in bloom, including *Pterostylis mutica*, *P. rufa*, *Prasophyllum fuscum*, *P. patens*, and *Calochilus campestris* ; also copper-headed snake (*Hoplocephalus superbus*); by Mr A. W. Coles, pair of collared wanderer quail, from Werribee ; by Rev. A. W. Cresswell, miocene tertiary fossils, from Bairnsdale, (*Hinnites Corioensis* and *Clypeaster Gippslandicus*); by Mr. P. Dattari, orchids in bloom, *Caladenia Patersoni*, and *C. Menziesii* ; by Mr. C. French, orchids in illustration of his paper, also 10 species of venomous snakes from Queensland, viz., *Diemenia olivacea*, *D. psammophis*, *Hoplocephalus nigrescens*, *H. pallidiceps*, *H. signatus*, *Hydrophis elegans*, *Enhydrina Bengalensis*, *Cacophis Harriettæ*, *Pelamis bicolor*, *Petrodymon cucullatum ;* by T. A. Forbes-Leith, mounted specimens of Keivi (*Apteryx Mantelli*) from New Zealand ; by Mr. J. H. Gatliff, 3 species of Tunicata ; by Mr. R. Hall, curious growth of barnacles : by Miss Hood, botanical and geological specimens from Western Queensland ; by Mr. H. Kennon, fossils, etc. ; by Mr. A. Lukey, Victorian birds ; by Baron F. von Mueller, a Queensland pitcher-plant, *(Dischidia Timorensis);* by Mr. F. M. Reader, mounted Victorian fungi, representing the tribes *Agaricini*, *Polyporei*, *Auricularini*, and *Trichogastes ;* by Mr. J. F. Roberts, exotic orchid in bloom,—*Trichopilia suavis* from South America, and *Dendrobium macranthum* from Manilla ; by Mrs. R. Simson, Queensland plants ; by Mr. T. Worcester, two specimens of the Hammer-headed oyster, *(Malleus vulgaris*) from West Australia.

After the usual *conversazione* the meeting terminated.

FIELD NATURALISTS' CLUB EXCURSION TO FRANKSTON.

By Messrs. C. French and D. Best.

(Read before the Field Naturalists' Club of Victoria, August, 1884)

Of the many excursions made by members of the Field Naturalists' Club, that of Tuesday, the 1st day of July last (which

had been proclaimed a public holiday in honor of the anniversary of her Majesty's birthday), was probably as enjoyable as any. The day was all that could be desired, the sun shone out brightly, and a mild breeze prevailed which rendered walking not only exceedingly agreeable but a positive pleasure, indeed one must have been of a most lazy and indolent nature who could not appreciate all the advantages to health and mind, to be derived from a walking trip under such exceptionally favourable circumstances. The locality selected for the F.N.C. to explore was the well-known watering place, Frankston, situated on the eastern shore of Hobson's Bay, a distance from Melbourne about 27 miles. When the train left the city at 9 o'clock a.m., on the Tuesday, some twelve members had put in an appearance, among them being four of the juniors, of whom it may be justly stated that they were equally if not more energetic than the elder ones. The journey by train is a somewhat monotonous one, so far as scenery is concerned, especially after we leave Brighton. The country presents nothing worthy of note, for after passing Mordialloc, the train skirts so close to the beach on the one side and the wretched looking Carrum swamp on the other, that nothing is to be seen but the everlasting Tea-tree, *Melaleuca ericifolia*, and the common Coast Honeysuckle, *Banksia integrifolia*, and the station master here, (unless he be of a particular romantic turn of mind), must indeed have anything but a lively time of it.

To anyone who has been accustomed to travel and collect in this neighbourhood, 30 years since, when a collector might have worked for days and even weeks, without seeing a living soul or hearing a sound save those of cattle, bullock-bells, or perhaps the yabbering of a stray blackfellow and his lady, these forming the remnant of the once powerful, but fast disappearing Mordialloc tribe, who used to frequent the Kananook Creek for the purpose of spearing eels, which formed part of their daily food, it certainly seems strange to be occasionally disturbed by the shrill screetch of the passing locomotive and its living freight of pleasure seekers, which, after all, only reminds us of extending civilization, and points to a speedy and effective curtailment of our collecting fields. Having made this perhaps unwarrantable digression, it may be of interest to relate a curious incident that here came under the notice of one of the writers of these notes, viz., that in or near the spot on which the Kananook Railway Station now stands, more than 27 years since, a small party of which the writer was one, came suddenly upon an Aboriginal woman who was lying in a Mia Mia made of a few leaves, and upon questioning her, we learned that her lord and master had suspected her of an intent to elope, so he took the effective but somewhat ungallant plan of breaking the lady's leg, in which sad condition we found her as described above. The author of this novel, prompt, but cruel treatment, was afterwards much mutilated by a friend of the

injured lady, but in the language of the novelist, we suspect that all ended in a satisfactory and amicable manner. This is, however, no time to soliloquize, so we must proceed.

Frankston was reached about 10.30, and the whole party assembled, and after some slight refreshment were soon ready for a start, all fully armed with the requisite materials for securing the specimens they hoped to meet with. Unfortunately, however, a great disappointment was experienced at the non-appearance of Mr. Caire, the photographer, a member of the Club, who had promised to be present to take the photographs of the Field Naturalists at work. Sickness however unfortunately prevented him carrying out his intention, and those who expected to be thus immortalized as Field Naturalists, must rest content until another, and let us hope, a more successful opportunity occurs. One of the party having heard of the existence of a Giant Cactus growing in the district, it was unanimously decided that this should be the first object to receive our attention. Accordingly, Mr. French having been selected as leader, speed was put on at the rate of several miles per hour, until the place which is between 2 or 3 miles from the township was reached, the distance being covered at high pressure speed, and finally the party were amply rewarded for their extra walk, the Cactus in question being a magnificent specimen of *Cereus giganteus*, the Tuwarrow or Taguaro of the Mexicans, whose beautifully ribbed or fluted stems, 5 in number, reaches the height of between 16 and 17 feet. The plant had been growing for a number of years in its present position, and doubtless had its origin from seeds sent by Professors Asa Gray and Engelmann to Baron von Mueller, by whom it was first distributed in the colony, more than 25 years since. We were fortunate to include in our company an artist, Mr. P. Dattari, who has made a very excellent sketch of the plant and its surroundings, which he will show you this evening. It may be mentioned that the fact of this plant thriving in such close proximity to the sea-beach, was not generally known. The owner is Mr. Davey, one of the oldest residents in the district, and who was unfortunately ill at the time of our visit. In its native habitat, this species of Cactus is said to attain a height of 60 feet, with a diameter of 2 feet. Leaving the giant Cactus and its obliging owners, we hastened to retrace our steps towards the township, striking across the country in an easterly direction. We had not proceeded far, when one of our party who has the reputation of having an "eagle eye" for anything in the shape of a plant, discovered a few solitary specimens of *Ophioglossum vulgatum*, the curious little "Adder's tongue" fern of pteridologists, and close by the sportsman of the party "brought down" a specimen of the Scarlet-breasted Robin, *Petroica multicolor*, and also a White-eared Honey-eater, *Ptilotis leucotis*.

(To be continued.)

RECORD OF A NEW PAPUAN RHODODENDRON.

By Baron von Mueller, K.C.M.G., M.D., Ph.D., F.R.S. &c.

During a recent ascent of ranges fully 6000 feet high in south-eastern New Guinea it fell to the fortunate share of Mr. Carl Hunstein, to discover a grand epiphyte, of which he brought a solitary flower, but made a colored sketch of the latter also. Though it is unusual, to define any plant botanically from a single flower, I feel no scruples in this exceptional case, to place at once this superb production of the Papuan Flora on descriptive record, especially as the material, altho' scanty, does allow of referring the plant clearly to the genus Rhododendron. Thus also I am enabled, to fulfill a long-cherished wish, to connect with some splendid floral treasure the name of the Marquis Goyzueta de Toverena, Consul General in Australia for the Italian Kingdom, a nobleman who has given much encouragement to my researches, while representing here for a series of years worthily his great country. Preliminarily this new plant may be thus described.

RHODODENDRON TOVERENÆ

Corymbs containing about 12 flowers, each at an average 6 inches long and wide ; calyx reduced to a terminal narrow oblique expansion of the stalklet, the latter nearly glabrous ; corolla pure-white ; its tube slender-cylindrical, about 3 inches long, but not half an inch wide at the middle, slightly widened upwards ; lobes seven, horizontal, oblong-ovate, somewhat waved, scantily reflexed at the margin for short spaces, rounded-blunt or (according to the sketch) occasionally sinuous at the summit or there produced into 2 or 3 lobules ; stamens 14, somewhat exserted, about 4 inches long ; filaments in their lower portion densely beset with short spreading hair, in the upper portion nearly glabrous ; anthers linear-cylindrical, nearly or fully half an inch long ; pistil hardly longer than the corolla-tube, cover of the stigma patellar ; stigma 7-lobed ; style about $1\frac{1}{2}$ inch long, as well as the ovary fulvous-velvety except towards the summit ; ovary 7-celled.

Four species of Rhododendron are described from New Guinea in Dr. Beccari's "Malesia," I, 200-202 ; they all came from Mount Arfak ; so that the addition of a south-eastern species renders it now probable, that these superb kinds of plants occur in numerous specific forms throughout the higher regions of the Papuan Island. This fifth congener differs already in its white and very large flowers from the other four ; but Rh. Konori has also a 7-lobed corolla (a characteristic otherwise only prevalent in Rh. Fortuni), and the number of stamens is also about the same as in Rh. Toverenæ, while the anthers are likewise remarkably elongated.

Among the Sikkim-species of Rhododendron our new one approaches to Rh. Edgeworthi : but the flowers are numerous (forming indeed according to the collector's note magnificent umbel-like bunches of over one foot's width), the limb of the corolla is still broader, the tube much longer, the stamens become increased in proportion to the corolla-lobes, and the anthers are longer and pale-colored, while (as noted by the finder of the plant,) the stigma and upper part of the style are deep-red ; the foliage may also prove very different. Our plant comes nearer to Rh. Falconeri, so far as the copious masses of its flowers, the much-lobed corolla and the numerous stamens are concerned ; but the length and width of the flowers is much greater, and the shape of the corolla is not campanular. Indeed only Rh Griffithi in its variety Aucklandi comes up to the size of the flowers of Rh Toverenæ, the latter however again is distinguished by the comparatively slender corolla-tube, much longer anthers and a denser vestiture of the pistil. Mr. Hunstein speaks of pink leaves next the flowers, which would accord with young leafshoots of red tinge, such as are observed in several Rhododendrons, particularly Rh. Fortuni and Rh. Hookeri. A consideration of the fact, that the calyx in many species of Rhododendron becomes obliterated, strengthens the view, that the floral envelope of Proteaceæ and a few orders allied to them is petalline not calycine.

NOTE ON THE OCCURRENCE OF BRYOPHYLLUM AND SANSEVIERA IN AUSTRALIA.

By Baron von Mueller.

Among some plants, recently received from Mr. Persieh, and obtained in the vicinity of the Endeavour River, occur Bryophyllum calycinum and a species of Sanseviera. The news of the existence of either genus in North East Australia is not very surprising, as Bryophyllum calycinum had been traced already to New Guinea (See Papuan plants, pag. 107), and as the genus Sanseviera has representatives in various parts of South Asia. Of Sanseviera only a leaf has been received, so that the Australian species cannot as yet be named ; but the Bryophyllum from North Queensland is quite identical with the elsewhere widely distributed B. calycinum, adding however a genus to the Australian Flora.

It may be added on this occasion, that many forms of what might be called the Darling vegetation have recently been traced into Queensland also, among them representatives of the genera Gnephosis, Angianthus and Waitzia.

DESCRIPTIONS OF SOME AUSTRALIAN BIRDS' EGGS NOT PREVIOUSLY DESCRIBED.

By Dr. T. P. Lucas.

Podargus Phalænoides.

Moth-plumed Podargus.

Gould describes this bird as a native of Port Essington, the north-west coast, and abundant in the Coburg Peninsula. Mr. Peerman, a squatter, sent me word that he took a nest in the Riverina. It was the merest platform of sticks. He shot the bird off the nest. I received an egg from a nest taken about 100 miles to the north of Adelaide. Thus it would appear to have a much wider range than noted by Gould. The eggs are two in number, white, ovate oblong, both ends of equal size. 1 inch 4 lines x 1 inch 2 lines.

Podargus Marmoratus.

Marbled Podargus.

I have received an egg of a mopoke from near Rockhampton, which, from the size and because of the locality, I am fully persuaded belongs to this species. It will be necessary, however, for a future observer to verify the same by shooting a bird. Egg white, ovate oblong ; small end slightly smaller than large end. 1 inch 5 lines x 1 inch 2 lines.

Sittella Pileata.

Black-capped Sittella.

This bird is the white-throated or white-breasted Tree Creeper of South Australia. I received an egg taken about 100 miles north-west of Adelaide. The nest is similar to that of the Orange-winged Sittella. Egg rounded ovate, large rounded large end, small rounded small end ; ground colour greenish grey, sparingly covered with purplish-grey blotches as if beneath the surface of the shell, and a number of purple-black spots and dots with an indefined smeared out outline, chiefly at the larger end. Number of eggs probably three. 9 lines x 7½ lines.

Psephotus hæmatorrhous.

Red-vented Parrakeet. Blue Bonnet.

I met with this bird in the Riverina, where it appears to extend from the Mamoi and Darling to the Murray. It is probably confined

to a tract in the interior, extending for some 500 miles. It builds no nest, but lays from 5 to 7 white eggs in a hole of a tree. Mr. Campbell found a nest this year with young birds. I obtained a clutch of three eggs from near the Murray, taken by a bird-catcher. Eggs ovate rounded, white. 1 inch 1 line x 11 lines.

Carphibis spinicollis.

Straw-necked Ibis.

A young gentleman, Mr. Manifold, in the Murray district, found a nest made of sticks in a tall, thick bush, and near the Murray. There were five eggs in. One of the birds appeared to have been crippled, and hence, probably, the reason for the pair breeding there. Mr. Leith obtained another lot of eggs from the same district, and when in Sydney, I saw another batch of eggs, and named as above. Mr. Campbell has described similar eggs as those of the White Ibis, but does not give his authority. Hence it will be interesting for future observers on finding the nest of either species to shoot the bird, and so confirm or correct the present records. Egg ovate oblong, white, chalky, superficially and irregularly pitted. 2 inches 6 lines x 1 inch 9 lines to 1 inch 10½ lines.

Œstrellata Leucoptera.

White-winged Petrel.

Early last season a friend brought me the eggs of this species from some of the small islands off East Gippsland. It lays one egg at the end of a hole, about one foot in depth. The eggs vary considerably. Some are rounded, others rounded ovate, creamy white, slightly chalky appearance, and with the peculiar musty, fishy smell. 1 inch 6 lines x 1 inch 3 lines to 1 inch 7 lines x 1 inch 6 lines. Breeding season, August and September.

Podiceps Australis.

Australian Tippet Grebe.

This bird extends from Tasmania to the lakes and flood grounds of the Riverina. It represents the Crested Grebe of Europe, and is probably an allied, but different species to the New Zealand type. The nest is a mass of weeds, reeds, &c., piled up, and either floating on the water, or amidst the dense growth of partially flooded swamps. The eggs are three to five in number ; ovate-acuminate, milky-blue, smeared with white chalk in large irregular patches. In some specimens which are smaller than the type, the large end is less elongate and more rounded. The eggs soon become buff-coloured and afterwards brown, dyed by the mud upon the breast of the parent bird. 2 inches—2 inches 3 lines x 1 inch 4½ lines—1 inch 6 lines.

NOTES ABOUT LYRE-BIRDS.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 8th Sept., 1884)

"In 1844, Mr. Hawdon, with a party of twelve able-bodied men including black native police, was instructed by the Government to open up a practicable route for cattle from Western Port to Gippsland. It was while performing this journey that he had an opportunity of closely examining the shy and curious Lyre-bird." This is an extract from "The Colonies of Australia," by Samuel Sidney, 1853, and is the oldest published data we possess respecting Queen Victoria's Lyre-bird (*Menura Victoriæ*), named by Gould in honor of our Most Gracious Sovereign. This species is frequently and erroneously confounded with *Menura superba*, the New South Wales variety.

The oldest information possessed by me dates back to 1847, when a relative of mine commissioned a blackfellow named McNabb, (a somewhat aristocratic Caledonian name for an aboriginal of the Yarra Yarra tribe), to obtain some tail feathers. He was absent a few days and returned with five tails, which he procured on the river side of the Dandenong Ranges, and for which he received one shilling each.

Much has been said and written about Lyre-birds, yet still comparatively little is known concerning their natural economy. This is principally due to its shy disposition, and the almost inaccessibility of the tracts of country frequented by them. Its position in the great list of birds is very unique, and not only are the eyes of all Australian but of all the ornithologists of the civilized world directed towards the wonderful Menura.

I shall content myself in this paper by simply narrating a few facts hitherto unpublished or imperfectly known, which have been gathered from personal observation or furnished by friends who have been favorably situated. Of course, my remarks refer to the Victorian variety, and are principally connected with its nidification.

Also by data hereinafter mentioned, I shall endeavour to move the Club to memoralise the Honorable the Commissioner of Trade and Customs—the administrator of the "Game Act," to take the necessary steps to extend the close season for Lyre-birds, say from the first day of July, in lieu of the first August.

Their limits of locality extend from the Australian Alps and adjacent spurs southward through favourable tracts of country to the

coast ; but not further westward than the Plenty Ranges. Their food consists principally of beetles. centipedes, scorpions, worms, land-crabs and snails, and occasionally something more solid, in the shape of bush mice.

Lyre-birds pair and build their nests about the middle of June or the beginning of July. Their single eggs are generally laid about the end of that month, but certainly not later than the first week in August. I knew of two instances of eggs taken in June. In three nests taken myself, the eggs were deposited about the beginning, middle, and end of July respectively, therefore, as far as the taking of eggs is concerned, one may drive the metaphorical "coach and four" through our "Game Act," which only protects these birds from the first of August.

The birds lay one egg a season. Twice I heard of two eggs in one nest.

As before mentioned, the pairing season is about June. At that period the males sing more than at any other time, and like human beings they don their best frills for courting, their sombre plumage appearing very sleek, and their graceful tails are at their prime. When the female commences to incubate and throughout that term, her mate ceases to sing so lustily, in fact, is almost silent. I believe both aid in the construction of the nest, but the female alone incubates. I possess no facts respecting the duration of that period, but should judge about twenty-one to twenty-eight days.

Nests are usually placed near the ground in thick scrub, in valleys, or gullies, as well as on ridges and more level country, but generally in the neighbourhood of ferns and fern trees. A favourite position is at a butt or in a fork or elbow of a convenient tree, or on leaning fern-tree trunks, or not unfrequently in the hollow stump of a high gum-tree that has been snapped off by some gale.

The inner or proper nest is constructed of the dark-brown wiry and fibrous material of tree-fern trunks and other fern rootlets closely matted together and interwoven with stringy leaves, moss, sand, &c., the inside bottom being lined with the bird's own breast feathers. It is oval, about twice the size and same shape as a modern football, with an end lopped off which serves for a rounded side entrance. This inner nest is embedded in an anterior or outer nest composed of large sticks and twigs, resembling that of an eagle's, with spouted platform of landing place at the entrance. The roof of the inner nest is also protected with sticks, and over the whole structure are often artfully thrown a few dead or green fronds and other vegetation.

The dimensions of different nests do not vary much. The following are sizes of one which I took on the spot. It was situated in a gully on a slight eminence, consisting of a fallen tree-fern trunk with other *debris*. So cunningly was it hid, that it was undiscoverable from behind to a person not two paces off: but the front, which

betrayed it, commanded a good out-look down hill. Over all, height, breadth and depth, were 2 feet each way ; through diameters (*i.e.*, length and breadth) of interior nest, 1 foot 3 inches and 1 foot respectively ; entrance 6 inches across ; inside or egg cavity, from wall to wall, and from roof to floor, 10 inches each way, and from entrance to back wall 1 foot 1 inch. The ragged spouted platform or landing place extended 5 or 6 inches beyond the entrance.

The egg, which was hidden by the feathers, lay at right angles with the entrance, and measured 2 inches 5 lines by 1 inches 8 lines. The egg was of the usual color, purplish-grey, mottled with spots and blotches of a darker color.

The female doubles her tail over her back and enters backwards into the nest. When securely settled only her head and tail-tips are visible at the entrance. When incubating, her mate keeps away.

I could never find evidence of the birds reconstructing their old nests as mentioned by Mr. F. J. Williams in his instructive paper, "The Habits of the Lyre-bird," read before the Club, February, 1881 Mr. Williams also states that on going to roost at night they "choose a secluded spot sheltered from the wind, and mostly in a low tree." My observations are the reverse of this. About dusk I have watched them, till I almost lost their form, fly more than 100 feet up to the thick branches of some great forest patriarch. They ascend by a succession of leaps and short flights, from bough to bough, and from tree to tree, always surveying the position after each move. I also know for a fact, that birds have been watched coming out of gullies to roost on large dead trees of the ridges, where they have been shot. In roosting they do not congregate. Sometimes during moonlight seasons a cock bird from his elevated perch agreeably disturbs the midnight stillness of the forest by his delightful shrill whistle.

The powerful sonorous ring of the Lyre-bird's natural song is not surpassed by any of its Australian compeers ; as to its mocking capabilities, it certainly leaves all the world's mocking birds far behind. Its ear is so accurate that it can imitate to the very semitone the vocality of any of its forest friends, whether the solemn "mo-poke" of the Owl, the coarse laugh-like notes of the Great Brown Kingfisher, or the higher pitched and more subdued notes of smaller birds. But the most extraordinary performance is the imitating, not a single bird, but a flock ; therefore it has to produce duplex or double-sounding notes. I have heard it imitate simultaneous sounds exactly like the voices of a flock of Pennant's Parrakeets rising from the scrub. It is equally at home with other familiar forest sounds, the grunting of the Koala or Native Bear, the barking of the selector's dog, the noise of the splitter's saw, or the clinking of his axe against the metal wedge, all alike are perfectly reproduced in the throat of this most singular feathered mimic. It may be yet proved

that this bird is also an able ventriloquist. I am in possession of some scraps of information, yet not sufficient to warrant me stating facts here. The birds do not sing in windy weather, but in South Gippsland, where the mountain spurs terminate abruptly at the sea, and where the birds are found and breed within 50 or 100 yards of that element, it is most delightful to hear their pure liquid songs above the booming of everlasting ocean billows.

It should be mentioned that the cock bird only whistles and mocks, the hen does not,but her alarm and call notes are identical with her mate's. The alarm note is a short, shrill whistle, not unlike that produced by a person placing the tongue against the upper teeth after the fashion of the street arabs. The call is a lower pitched double-note something like "beleck-beleck" or "bullan-bullan." Both sounds are aboriginal names of the Lyre-bird.

Of course it is known to nearly all, that the male birds each possess several little mounds of earth on which they caper and jump about while pouring forth their songs, also proudly drooping their wings and displaying their elegant tails. But at times certain sounds are emitted and a peculiar action of the tail produced that have not yet been recorded. Between periods there comes from the throat a spasmodic buzzing or purring noise, at the same time while the tail is expanded or reflected over the back all the quills violently shiver.

My friend, Mr. Charles Chandler, of Malvern, informed me of an albino cock bird he twice noticed in the Bass River district. It sang most melodiously and was a lovely creature. Its pure white plumage formed a wonderful contrast with the eyes, bill and legs which were black. The tail was large, well-formed, and of the usual colour. I have also heard of spangled varieties from the same district

I shall conclude at this time by stating two ludicrous legends respecting Lyre-birds. One which has been published states that they are a species of Thrush. The other is not an uncommon belief that they are remarkable pheasants, which whistle and produce music with their tails. The latter may be explained from the fact that all lyres are music-producing, and the two most conspicuous tail feathers are lyre-shaped, hence the name of the bird.

Through the generous assistance of a member of the club, Mr. N. J. Caire, landscape photographer, I have been greatly enabled to illustrate this paper by means of three handsomely executed pictures, viz., the haunt of the Lyre-bird, situation of nest, and nest itself.

ERRATUM.

On page 83, line 25, omit the word "flowering."

EXCHANGE.

Mr. F. M. Reader would be glad to exchange New Zealand Ferns for species of *Uvaria*, *Melodorum*, *Mollinedia*, *Cryptocarya*, *Pachygone*, and *Cleome*. 103 Smith Street, Fitzroy.

NOTICE.

All communications for the "Victorian Naturalist," should be sent to the Editor, A. H. S. Lucas, M.A., B.Sc., F.G.S., 7 Albert Road, Albert Park.

Field Naturalists' Club of Victoria.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, Melbourne, on Monday evening, November 17th, 1884.

The President, Rev. J. J. Halley, occupied the chair, and about fifty members and visitors were present.

The hon. sec. reported that the Club excursion to Olinda Creek on Prince of Wales Birthday, had been well attended, that many interesting specimens had been obtained, and that a short account of the trip would be published in the "Naturalist."

The hon. librarian acknowledged the receipt of a valuable donation of books from Mr. Hugh Kennon

The following gentlemen were elected members of the Club :— Rev. W. W. Mantell, Dr. A. Morrison, Messrs. J. T. Gillespie, E. C. Haviland, C. Jesse, G. P. Morison, E. Purton, and S. Wills.

A paper for a future meeting was promised by Mr. A J. Campbell, on "Mallee Hens and their Egg Mounds."

The hon. secretary mentioned that a bill for restricting the use of swivel guns was before Parliament, and suggested that some steps be taken to support it. It was decided to bring the matter before several members of Parliament, and also to present a petition in its favor.

Papers read—1. Messrs. French and Best contributed a very interesting paper entitled "A trip to Mulwala, Upper Murray, N S.W." This fully described the fauna and flora seen by them during a three days visit to that locality. From the very large number of specimens shown, among which may be noticed a very fine iguana, and a large number of dried plants, it was evident they had not been idle during their holiday.

2. Dr. Lucas read the concluding part of his paper, "Notes of a trip to Fiji," in which he described the natural history of the Rewa River and Levoni Valley.

The principal exhibits of the evening were—By Mr. E. Bage, leaf insects, and a horned trunk or cow-fish (*Ostracion cornutus*), from Fiji ; by Mr. A. J. Campbell, helmeted honey-eater (*Ptilotis cassidix*) with nest and eggs, taken at Olinda Creek ; by Mr. G. Coghill, coleoptera, and orchids (*Chiloglottis Gunnii* and *Calochilus campestris*), from Lilydale ; by Mr. J. E. Dixon, seven species of birds, also botanical specimens, from Lilydale, and nest of trap-door spider from Queensland ; by Mr. C. French, a fine exhibit of the fauna and flora of Mulwala, N.S.W., in illustration of his paper ; by Master French, two native axe-heads from Drouin ; by Mr. J. H. Gatliff, mollusca of genus *Natica*, also egg capsules of *Cominella* from St. Kilda beach ; by Mr. W. Hatton, head of black-eyed albatross (mounted) ; by Master Hill, natural history specimens ; by Mr. T. A Forbes-Leith, forty species of American birds ; by

Mr. F. M. Reader, lichens from Studley Park (mounted); by Mr. G. Rose, limestone specimens from Lilydale.

After the usual *conversazione* the meeting terminated.

THE "CAMP OUT" AT OLINDA CREEK.

On the Prince of Wales' Birthday, November 9th, and the days preceding and following, the F.N.C. had their first camping-out excursion. Olinda Creek, near Lillydale, was the spot chosen. The weather was all that could be desired, and the outing was a pronounced success. The members of the Club who proposed taking part in the excursion having made all their arrangements, two of their number proceeded to Lillydale by road with the heavier baggage, on Friday, November 7th, and having selected a suitable spot for the camp, erected their tents. The next contingent arrived by the early train on Saturday morning, whilst others followed by the mid-day and evening trains. Saturday was devoted to perfecting the camping arrangements, and making short rambles amongst the adjacent scrub. The spot selected for the camp was within a very short distance of the township of Lillydale, so that in case of provisions running short there would be no trouble in replenishing the stock, the creek flowing close by, afforded an unlimited supply of excellent water, besides furnishing an opportunity for the anglers of the party to try their luck. On Sunday morning most of the "campists" were up at day break and enjoyed the awakening of the numerous specimens of bird life. Breakfast disposed of, parties were made up for collecting purposes. All departments of natural history were represented, zoologists, ornithologists, oologists, entomologists, botanists, etc., being all there. Being Sunday the guns were left behind till the morrow. During the day several interesting captures were made. The ornithologists were successful in taking for the first time the nest and eggs of the rare and certainly the most beautiful of all the Australian honey-eaters, viz., the helmeted or sub-crested, *Ptilotis cassidix*, (Jardine) or *P. Leadbeateri*, (McCoy), the taking of which nest involved a good ducking for two of the naturalists, as the tree in which it was situated gave way and precipitated the captors, nest and all, into the running stream. Many other eggs were taken, amongst which may be mentioned those of the yellow-faced honey-eater, (*P. chrysops*), white-shafted fan-tail, (*Rhipidura albiscapa*), yellow robin (*Eopsaltria Australis*), finch, (*Estrilda temporalis*), Bronze Cuckoo (*Chalcitis pladogus*), the last was taken in an *Acanthiza's* nest. The botanists were successful in finding a variety of that singular orchid, *Chiloglottis Gunnii*, also *Gastrodes sesamoides* was noted several times. Splendid spikes of that beautiful orchid *Thelymitra*

aristata were obtained; of ferns, about twelve species were noticed the larger star-fern, *Gleichenia flabellata*, being perhaps the most valuable. The Entomologists had the poorest luck, as though the day was warm and bright, with very little wind, insect life was extremely scarce, this was probably owing to the rather meagre quantity of flowering shrubs; of Coleoptera a few species of Buprestidæ and Cleridæ, were captured, whilst Lepidoptera were represented by specimens of the hill butterfly *Hipparchia abroma*, and that rather local butterfly *Papilio Macleayii*, also a few moths of unnamed species. Everybody returned to camp thoroughly pleased with the day's outing, and in a fit state to test the qualities of the hammocks or blankets. Before starting in the morning several good photographs of different groups were obtained by Mr. N. J. Caire, who had joined the party for the express purpose The early part of Monday morning was employed by the "campists" in packing up, and shifting the camp, so as to be prepared for the final break-up in the evening. By the arrival of the early train a reinforcement of seven members with several friends arrived, and were conducted to the camp by one of the members who had gone to the station to meet them. These on their arrival at the camp, were at first afraid they had been conducted into the midst of a band of Italian banditti, so varied and formidable looking were the clothes and weapons of the party. However, matters were soon set right by an invitation to breakfast. Another photograph was then taken, so as to include everybody who had joined the camp. after which parties for exploring purposes were formed. The day turned out almost too hot for bird or insect life, and the members being somewhat tired with their exertions of the previous days, the results of the day were not so large or important as had been anticipated. About five o'clock the different parties returned, and having compared notes, and refreshed themselves by a good wash and a hearty meal, packed up their various captures, &c.; then forming into a large party, marched through the township to the railway station, and thus back to Melbourne, which was reached about 8.30 p.m.

The trip was thoroughly enjoyed by everyone, and the valley of the Olinda Creek will well repay the visits of Naturalists at almost any time of the year.

The following is a short list of the principal species identified:—

Mammalia:—Red-necked Wallaby (*Macropus ruficollis*), Native Bear (*Phascolarctus cinereus*), Ring-tailed Phalanger (*Phalangista canina*), Bandicoot (*Perameles* species.)

Birds:—At least 50 species including, besides those mentioned, the Great and Boobook Owls, and the rare Fantail (*Rhipidura, rufifrons*), Varied Grauculus, White-shouldered Campephaga

White-throated Thickhead, Frontal Shrike-Tit, Rufous-fronted and Shining Flycatchers, the Coach-whip Bird, Emu Wren, Spotted Ground Thrush, Mountain Thrush, New South Wales Oriole, Warty-faced and Spine-billed Honey-eaters, White-throated Tree Creeper, Fantailed and Bronze Cuckoos, Chestnut-shouldered Grass Parrakeet, Southern Stone Plover, and Nankeen Night Heron.

Reptiles:—Black Snake (*Pseudechys porphyriacus*), and Lace Lizard (*Hydrosaurus varius*).

Plants:—Comparatively few Dicotytedons. Orchids – 12 species, including *Gastrodia sesamoides*, *Calochilus campestris*, *Pterostylis cucullata*, *var.*, *Chiloglottis Gunnii*, *var.*, &c. Ferns—15 species.

As this was the first "camp out" of the Club, perhaps the names of those who took part in it may be interesting to some of our readers. The following were those that camped out—Messrs. A. Borthwick, W. A. Butters, N. J. Caire, A. J. Campbell, G. Coghill, E. Cornwall, J. E. Dixon, J. T. Gillespie, S. Hales, W. Hatton, A. W. Milligan, G. Savage, and three friends, whilst Messrs. F. G. A. Barnard, C. French, Junr., T. Lucas, Junr., J. E. Prince, G. Rose, O. A. Sayce, E. Symonds, with several friends, joined on the Monday.

FIELD NATURALISTS' CLUB EXCURSION TO FRANKSTON.

By Messrs. C. French and D. Best.

(Read before the Field Naturalists' Club of Victoria, August, 1884)

(*Continued from last month.*)

Crossing the country which is here very picturesque, we suddenly came upon a creek, whose banks were very steep, which near the bottom was covered with the common though beautiful Maiden-hair Fern, *Adiantum æthiopicum*, near which were also found several species of Mosses, and a solitary patch of a species of *Jungermannia*, specimens of which, with its singular crozier-shape fruit, were collected, and in the meanwhile one of our party who has a well-known penchant for Algæ, &c., found some chara, and "bottled up" some repulsive looking aquatic material for future reference, including *Dasyactis* species, *Hydrianum heteromorphum*, *Conferva* species, also growing on decaying vegetation, *Pleurococcus communis*. These are species not hitherto collected in any other locality. A large number of Desmids and other algæ were collected, but as they did not present any new features, are not mentioned. This creek, the bottom of which is strewn with granite boulders and studded with mica amongst the loose fragments, formerly bore the

name of Silver-water creek, but whether this elegant and humble name has shared the fate of many others of late years, and has been changed to perpetuate the name of a "Mr. Somebody" we know not. Leaving this romantic spot, and its old associations, we steered our course N.E. and presently came on a patch of very scrubby country in which we found growing several plants out of flower, of *Euphrasia Brownii*, *Hakea semiplana*, *Persoonia juniperina*, and the other pretty and well-known favorites, but as the day was short, and the sun was getting low in the horizon, we had not sufficient time to make any proper attempt to explore the district, which by former experience is known to be rich in botanical specimens, as it was near this place where the first specimen of *Thelymitra McMillani* (then new to science) was discovered 20 years since. A very curious excrescene on the foliage of the common "Native Fuchsia," *Correa speciosa*, was here found, and specimens secured for examination as to probable cause &c., and in the bottom of a small gully near a very handsome *Vermillion Red Fungus*, *Clavaria*, was also found. Continuing our course towards the Railway Station, another very deep gully was crossed, in which was seen a solitary specimen of *Lomaria capensis*, and not far from this spot a specimen of the Spine-bill, *Acanthorhynchus tenuirostris*, and also one of the Harmonious Shrike Thrush, *Colluricincla harmonica*, were shot. Steering a "bee line" a fine moist flat was crossed, in which was found a quantity of the singular little *Lycopod*, *Phylloglossum Drummondi*, and these were were dug up for cultural purposes, as Baron von Mueller has stated that there are some interesting facts worthy of observation concerning their organs of reproduction. Leaving this "likely-looking" flat, we commence to ascend the sand-hills which flank the township, and here were found specimens of a minute species of *Prasophyllum*, which is much like *P. intricatum*, but whether it is the latter species or not, has not as yet been determined by the Baron. Traces of the rare and beautiful Orchid *Orthoceras strictum*, were also found, and as it was upon this hill where it was discovered on a former excursion, we took the liberty to christen it Orthoceras Hill. As we draw near to the reserve (which is fenced) we came upon some patches of the elegant Coral Fern, *Gleichenia circinata*, but as some "Vandal" had previously destroyed the greater part of it, since the occasion of a former visit, we were unable to procure a respectable specimen. It is hereabouts that on the same occasion was found the rare Orchid *Spiranthes australis*, the singular *Drosera*, *D. binata*, *Schizaea fistulosa*, and several other scarce specimens of the botany of the district, fully bearing out our opinion as to the plant resources of this favoured locality. The Epacris in this neighbourhood are worth seeing, being well in flower, more particularly the pink and dark rose varieties, and by way of a change a large bouquet, composed of *Epacris*, *Acacia suaveolens*,

Sprengelia incarnata, *Hypolaena*, some few grasses, and *Gleichenia*, was made up, these materials being ample for a really beautiful bunch of bush flowers. It being now nearly dark, a start was made for the hotel (the Bay View) as some preferred returning by the 4.30 train, while others (including the writer of these notes) remained behind, had tea, and enjoyed a few more hours of the bracing air of Frankston, and spending a very pleasant evening, returning by the 8.30. train. There can be no doubt that the locality of Frankston offers a fine field to the collector, more especially the botanical, and as the spring approaches we know of no place that we could or would so confidently recommend for members desirous of having a successful day's outing. Birds appear to be scarce, both in numbers and variety, but when it is considered that indiscriminate shooting is both allowed and indulged in, the wonder must be that they exist at all. Of insects, none whatever were taken, but no doubt some good *Longicorns* and *Buprestidæ* are to be found when the various trees and shrubs are in flower. Appended is a list of the principal specimens taken, those marked * being in flower at time of our visit.

BOTANY

(PHANEROGAMS)

**Correa alba.* Rutaceæ
* ,, *speciosa.* ,,
Euphrasia Brownii. Scrophul.
Drosera peltata. Droseraceæ.
Pultenæa sp. Leguminosæ
**Epacris impressa.* Epacridæ.
* ,, ,, *rosea.* ,,
**Astroloma humifusa.* ,,
**Acianthus exsertus.* Orchid.
Persoonia juniperina. Proteaceæ
**Sprengelia incarnata.* Epacrid.
**Pterostylis vittata.* Orchid.
**Pterostylis nana.* Orchid.
,, *aphylla.* ,,
* ,, *nutans.* ,,
Prasophyllum intricatum. ,,
Lyperanthus nigricans. ,,
Cryptostylis longifolia. ,,
**Eriochilus fimbriatus.* ,,
,, *autumnalis.* ,,
Thelymitra longifolia. ,,
**Acacia suaveolens.* Leguminos.
**Hypolaena fastigiata.* Restiaceæ.
**Melaleuca squarrosa.* Myrtaceæ.

(CRYPTOGAMS)

Schizæa fistulosa. Ferns.
,, *bifida.* ,,
Gleichenia circinata. ,,
Ophioglossum vulgatum. ,,
Davallia dubia. ,,
Lomaria capensis. ,,
Adiantum æthiopicum. ,,
Lindsæa linearis. ,,
Pteris aquilina, var esculenta. ,,
Phylloglossum Drummondi. Clubmoss,
Selaginella Preissiana. ,,
Clavaria species. Fungus,
Agaricus (several). ,,
Jungermannia species. Hepaticæ,
Sphagnum species. Moss,
Other Mosses, (several). ,,
Chara. Aquatic.

ORNITHOLOGY.

Colluricincla harmonica. (Harmonious Shrike Thrush.)
Ptilotis leucotis. (White-eared Honey-eater.)
Petroica multicolor (Scarlet-breasted Robin.)
Acanthorhynchus tenuirostris. (Spine-bill.)

FOSSILS.

Voluta undulata, *Mytilus latus*, *Haliotis nævosa*, &c., from the Raised Beach.

THE ORCHIDEÆ OF VICTORIA.

By C. Frenoh, Government Botanist's Department. (Part 5.)
(Continued.)

Diuris. (Smith.)

Dorsal sepal erect, rather broad, closely embracing the column at the base, lateral sepals narrow-linear, petals longer than the dorsal sepal, ovate-elliptical or oblong, on slender claws ; labellum usually as long as or rather longer than the dorsal sepal, deeply 3-lobed ; column very short, the wings produced into lateral erect lobes, but not continued behind the anther ; anther erect, often acuminate ; pollen masses granular or mealy, without any distinct caudicle ; terrestrial glabrous herb-like plants with underground tubers ; leaves narrow at or near base of stem, with a few sheathing bracts higher up. Flowers 1, 2, or several in a terminal raceme.

Diuris maculata.(Smith.)—This beautiful species which is very distinct, is, I regret to say, fast disappearing in the immediate vicinity of Melbourne, where it was in former years quite common. In the country around Box Hill, Hawthorn, &c., it may still be found though sparingly. During a recent trip to the Murray district, numbers of it were seen and collected in the Murray Pine scrubs, where it seems to thrive well. The flowers of this species are yellow, with brownish markings, and give the plant a somewhat striking appearance, and renders it of easy recognition. To grow it well, it should be planted in a somewhat sandy soil mixed with basalt rocks. It will stand plenty of water, and should if possible be slightly protected from the direct rays of the sun. For pot culture, I should advise the placing of say 12 tubers in a seed pan, then with a little care the plants would bloom almost at same time, and thereby form a very pleasing addition to the drawing-room or cool conservatory. Height, from 6 inches to 1 foot, of somewhat slender habit, flowers in October, November Found also in New South Wales, Queensland, South Australia, and Tasmania. *D. curvifolia,* is identical with this species.

Diuris palustris, (Lindley.)—A very slender and somewhat rare species, in appearance not unlike some of the smaller forms of

D. maculata, which it is said to be allied to. I have been fortunate in finding this species on but one occasion, viz , many years ago near the Melbourne Observatory, where I was collecting plants, and amongst other interesting specimens, I found what I took to be *D. maculata*, but my error was detected at a glance by Baron von Mueller, to whom I gave the specimen in question. In the country bordering on the Grampians, I believe it to be not uncommon, and I am indebted to my old friend, Mr. D. Sullivan, of Moyston, for the specimens shown this evening by way of illustration. To grow this species, I should say that a similar treatment to that for *D. punctata* would be quite successful. I may mention that this plant is somewhat more "grassy" in appearance so far as the foliage is concerned, than in the specimens even when small, of *D. maculata*. Flowers in November and December. Height about 5 to 6 inches. Found also in South Australia and in Tasmania.

Diuris punctata (Smith.)—This very fine and showy species is to be met with on flat damp grassy lands, in various parts of the colony; and even when not in flower, may be easily distinguished by a practised observer, by its robust, and erect habit, also by the great length of its unexpanded flowers. As this species is so unlike any others of the genus, it will hardly be necessary to give you any lengthy description of it, as its beautiful lilac purple flowers and singular appearance will be quite sufficient to enable anyone to recognise it when in flower. This species is well worthy of cultivation, being easily removed, (even when in full bloom) and requiring very little care. To grow it well, strong pliable loam should be used with plenty of drainage, and a never failing supply of clean water, and as regards the plan of growing it, the advice given for the preceding species, will also suffice for this plant. In the country near Lake Cooper, Mt. Martha, Lillydale, Elmore, Dandenong, and in fact nearly over the whole colony, this beautiful plant is certain to be met with, and sometimes it may be found growing by the hundreds, and as it dries well, keeps its color, and has an elegant appearance in the herbarium, it is a general favourite with plant collectors. Height from 6 to 12 inches. Flowers in November and December, often later. *D. elongata* and *D. lilacina* are synonymous with this species. Found also in New South Wales.

Diuris longifolia (R. Brown.)—This plant, which is better known as the *D. corymbosa* of Lindley, is a very elegant and somewhat variable species, found growing over most parts of the Colony and in all sorts of situations, and is equally at home either in the dense tea-tree flats in stiff clayey soil, in the sandy heaths about Brighton, or in the rich deep vegetable mould of our mountain districts. During a collecting trip to that Orchid collectors' paradise, Berwick, we found a number of specimens of this species, quite yellow, and without any indication of the beautiful purple shade peculiar to the

normal forms of the plant. In habit it is erect, with leaves rather broader than in most other species of the genus, and instead of the ordinary shaped tubers peculiar to most of our terrestrial orchideæ, it has succulent roots (one can hardly call them tubers) not unlike many of the smaller plants of the order *Liliaceæ*, as *Caesia*, *Chamæscilla*, &c. And this peculiarity seems to have been quite overlooked by Bentham. This is one of our easiest species to cultivate, and with the most ordinary care, it can be grown into good specimens and is a fit companion for those already mentioned. Flowers in November, and often earlier. Height from 6 to 18 inches according to soil and situation. Found also in South and West Australia, and in Tasmania. *D. corymbosa* and *D. porrifolia* are identical with this species.

Diuris sulphurea (R. Br.) Stature and habit very much like those of *D. aurea*, from which, as Bentham remarks, it is difficult to distinguish without examination of the flowers. Leaves usually broader than in that species. Flowers 2 to 5, yellow, almost always blotched with purple, at least at the base of the petals. The descriptions of these two species in many respects so much resemble each other, that I am inclined to regard them as one and the same plant, although I may be, and probably am mistaken in this respect. This beautiful Orchid may be looked for generally in grassy land, and in open forest country, where its stout and upright habit, bright orange yellow flowers, with the purple spot as stated above, but sometimes without it, will render it an object of easy observation. This species has a wide range, and may be found nearly over the whole colony. To grow it well, good leaf-mould with black sand, seems to suit it best, and as it is of the easiest culture, it is a general and deserved favourite. It seems a pity that the name adopted by Baron von Mueller, viz., that of *D. oculata*, was not adopted in the "Flora," as besides this being a most appropriate name, it would have saved considerable confusion amongst amateur orchidologists. Height from 6 inches to 2 feet. Flowers in November and December. *Diuris oculata*, species F. Mueller, is synonymous with this species. Found in Victoria, New South Wales, Tasmania and South Australia.

Diuris pedunculata. (R. Brown). Leaves several, at the base of the stem, usually about half its length, narrow-linear, flowers 1 or 2, (I have seen them with 3) , of a pale yellow, often with dark tinges or lines at or near the base, petals elliptical, labellum longer than the dorsal sepal, 3 lobed, the 2 raised longitudinal lines far apart, ending in pubescent calli at the base of the broad part of the middle lobe. This pretty though very common species, may be met with in nearly all sorts of situations where the soil is of a loamy nature. It may be readily distinguished from any other species by its very pale yellow flowers, slender habit, and the very constant character of the

pubescence of the labellum, also by it being far more common than any other species with which I am acquainted. The finest specimens, as in most other plants, are to be found in damp, strong, loamy soil, also on land which has remained unused for many years after ploughing, and here it may be found as plentiful as the common Ranunculus or Buttercup. If planted, say a couple of dozen tubers in a deep seed pan, and kept moist after its appearance above the soil, it will, with little care, make a very pretty plant for the house, care being always taken to allow the tubers to rest after flowering. Flowers in September to November, and even later. Common at Berwick, Dandenong, and many places nearer Melbourne. Height from 4 to 12 and even 18 inches. *D. lanceolata*, and *D. Behrii*, are identical with this species. Found also in New South Wales, Queensland, Tasmania, and in South Australia.

ORTHOCERAS (R. Brown.)

Dorsal sepal erect, incurved, hood-shaped, lateral sepals narrow-linear, long and erect, petals short, erect, narrow. Labellum 3 lobed, the middle lobe larger and contracted at the base, column very short, with lateral erect lobes not connected behind the anther. Anther erect, or slightly incurved, pollen masses granular or mealy, rostellum very short, tuber ovoid, few narrow leaves and several sessile flowers.

O. strictum. (R, Brown.) This most singular and somewhat rare genus of which we know of but one species, which under the name of *O. Solandri*, is also found in New Zealand, is to be found in heathy country, as a rule near the sea coast, although it has been frequently found inland. To those who collect wild flowers, and orchids in particular, I may say that this orchid is very easily distinguished from any other genus in the colony. The habit of the plant is erect, the leaves somewhat grass-like, color of flowers greenish-yellow, dark-brownish green, and sometimes nearly black, and is generally found late in the season, say in December or even later, on the sides or summits of heathy hills, near Brighton, Frankston, Dandenong, and other places. I have found it also growing in loamy soil, in which case the specimens have broader leaves and larger flowers. The above generic description taken from Bentham and Mueller's great work, will convey to any advanced amateur a correct idea of the plant. To grow it well, use plenty of black, sandy soil, good drainage, and an abundant supply of clean water. It is easily grown, dries well, (but slowly),and on account of its rarity and singular appearance, should be in every collection of Victorian Orchids, whether cultivated or in herbaria. Height of plant from 6 to 18 inches. Found also in New South Wales, South Australia, and in New Zealand. *O. Solandri*, and *Diuris Novæ-Zealandiæ* are identical with this species.

CRYPTOSTYLIS. (R. Brown.)

Flowers reversed, sepals and petals nearly similar, narrow-linear-lanceolate, thin and membranous, the petals usually smaller than the sepals, labellum longer and thicker than the sepals, undivided, sessile with a broad base enclosing the column, column short, anther erect against the back of the stigma, or bent forward over it, 2 celled, pollen masses farinaceous, flowering stems leafless, bearing 2 or more erect sheathing scales or empty bracts, flowers rather large, greenish yellow, with brown, red or purple labellum, several in a terminal raceme.

C. longifolia, (R. Brown). Another most remarkable plant, and totally unlike any other Victorian genus. This species is to be found growing in boggy, sandy flats, frequently amongst rushes, and in this situation it seems to flourish luxuriantly, and to assume a perfectly evergreen character, which, I believe, is the only instance of a non-deciduous terrestrial orchid in Victoria being so. The flower of this species seems to a casual observer, to be turned upside down, which, at first, gives to the flower a most singular appearance. In the boggy, scrubby flats near Berwick, Lillydale, Brighton, &c., this species may be found growing in great numbers, and as in the Orthoceras, it cannot be mistaken for any other orchid, so further descriptions than those given above will be unneccessery. Most of our orchid hunters will have noticed a peculiar looking dark-green stiff leaf, growing in the situations above described, and upon removal, the plant will be found to be without tubers, and the roots are a mass of succulent fibres, after the manner of many of our Liliaceæ. This plant being of the easiest culture, should be in every collection, its only requirements being boggy soil, plenty of water, and unlike most other orchids and plants generally, drainage is not an essential to its well-being. We have but the one species in Victoria, although there are three others known from various parts of Australia. Flowers in December and January, Height from 1 to 2 feet. Found also in Queensland, New South Wales, and in Tasmania. *Malaxis subulata* and *Cryptostylis subulata*, are synonymous with this species.

PRASOPHYLLUM. (R. Brown.)

Flowers reversed, dorsal sepal lanceolate or broad, concave, usually arched over the column. Labellum sessile, or on a short claw or claw-like basal appendage to the column, ovate, oblong or lanceolate. Column very short, not winged, but with two lateral erect appendages. Anther 2 celled, erect behind the rostellum. Pollen masses granular, attached to a linear caudicle. Terrestrial glabrous herbs with globular or ovoid underground tubers. Leaf solitary, usually with a long sheath. Flowers variously coloured, often pale or greenish yellow, several or numerous in a terminal spike.

I have here followed Bentham and Mueller, and have placed the species of this genus according to their sections, commencing with Section 1—Euprasophyllum.

Labellum sessile at base of the column.

P. elatum (R. Brown.)—This fine and showy species of this most interesting genus, will I dare say be known to most orchid collectors by the not inappropriate name of the Native Leek, its resemblance to the latter well-known vegetable being in my opinion quite sufficient to justify its generic derivation. In the damp sandy patches of the Epacris scrubs this singularly striking plant may be found growing to a height of nearly 3 feet, and I shall never forget my great delight when I in company with Mr. Schlipaulis, in 1862, first found it growing on a small conical hill, not far from the now celebrated Caulfield Racecourse, and being in the vicinity some time since, I made a visit to the same little hill, where, instead of its former beauty, I noticed on it not a trace of a plant of any kind, and a small white flag, a few surveyor's pegs, and sundry empty bottles and tins, were all that was visible as a remnant of its former glory. This plant in common with many others, seems to thrive better the season following a bush fire, not that I think the ashes have much to do with this matter, but no doubt when the scrub is cleared and the space opened up, it comes up much stronger, and forms a more robust and more beautiful plant, than when struggling with the surrounding hardy vegetation in order to gain the ascendancy. I must confess that I have been sometimes quite puzzled about this plant, as well as with that of *P. flavum*, for I have seen them growing very strongly in a particular spot, and the next season I have revisited the same place and have been unable to find a single plant, but then the paddock had *not* been burned, so this perhaps will account for it. The flowers of this species are as a rule of a dark olive green, sometimes seemingly nearly black, and as they can be seen from a distance of several hundred yards, there will be little fear of overlooking it. To grow this species, it should be dug up if possible, either before or after flowering, the latter being preferable. It should be placed in a large pot or pan, in black sand, well drained, and mixed with chopped roots of the native heath plants, as *Leptospermum*, *Ricinocarpus*, &c., and with a little attention and plenty of clean water it will thrive very well indeed. As its stout stem, blackish looking flowers, and unusual appearance, will render it easy of recognition, it will perhaps be unnecessary to describe it further. Flowers in October and November. Found also in New South Wales, Tasmania, South and West Australia. *P. australe* of Lindley, not of R. Brown, is identical with this species.

(To be continued.)

Field Naturalists' Club of Victoria.

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Time of Ordinary Meetings—The Second Monday in each Month at 8 p.m., Royal Society's Hall, Melbourne.

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THE

Victorian Naturalist:

THE JOURNAL AND MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

The Author of each article is responsible for the facts and opinions he records.

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PRICE—SIXPENCE

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1884.

FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, December 8th, 1884.

Mr. A. H. S. Lucas, one of the vice-presidents, occupied the chair, and about seventy members and visitors were present.

The hon. librarian acknowledged the receipt of the proceedings of the Linnæan Society of New South Wales, vol. IX., part 3., from the Society; also a further donation of books from Mr. H. Kennon.

The hon. secretary reported that a petition had been presented to parliament in favor of the Game Act Amendment Bill, as resolved at the last meeting.

The following gentlemen were elected members of the Club:—Messrs. W. A. Butters, Geo. A. Griffiths, S. Hales, H. Hughes, E. Johnstone, — Passmore, G. Renner, C. Savage, E. Stafford, and J. Bracebridge Wilson, M.A.

Papers read.—1. Mr. A. H. S. Lucas read a paper contributed by a lady member, entitled "Another Scotch Naturalist." This was an account of a visit paid to a poor Scotch bootmaker named Patterson, and was written with the view of bringing before the younger members of the Club, the many disadvantages under which natural history can still be studied successfully by an enthusiastic worker.

2. Mr. A. J. Campbell read a valuable paper on "Mallee Hens and their Egg-mounds," being the results of his recent observations of these birds and their habits in the Wimmera district.

He illustrated his remarks with drawings on the blackboard, and exhibited specimens of the eggs.

Several members mentioned natural history questions which had recently come under their notice, and which elicited considerable discussion.

The principal exhibits of the evening were:—by Mr. E. Bage, copy of Brown's Forest Flora of South Australia, parts 1 to 4; by Mr. F. G. A. Barnard, a young shark, taken from egg; by Mr. D. Best, Australian coleoptera, family *Chrysomelidæ*; by Mr. A. Borthwick, birds recently shot at Phillip Island, viz., white-bellied sea-eagle (*Haliætus leucogaster*), Pacific gull (*Larus pacificus*), and Mutton-bird (*Puffinus brevicaudus*); by Mr. A. J. Campbell, eggs of Mallee Hen (*Leipoa ocellata*); by Mr. G. Coghill, dried orchids; by Mr. A. Coles, fossil from bed of Suez Canal; by Rev. A. W. Cresswell, for Mrs. Peppin, Camberwell, precious opal from near Cooper's Creek, Queensland; by Mr. J. E. Dixon, seven species of English butterflies, and four species of British Hymenoptera; Master Dombrain, ten species of Australian birds; by Mr. C. French, humming-birds from Central America; by Master French, Victorian

fossils; by Mr. J. T. Gillespie, eggs of five Victorian birds; by Master Hill, insects from Windsor and Mt. Macedon; by Mr, Johnstone, geological specimens; by Mr. H. Kennon. English fossils; by Mr. W. Kershaw, timber-feeding Lepidoptera; by Mr. A. H S. Lucas, typical *Cerithia* from Headon Beds, Isle of Wight; by Mr. D. Le Souëf, Tiger skull, flying-fish caught near Java, death-adder from Queensland, and crabs from Malay States; by Mr. F. Reader, mounted fodder grasses; by Mr. J. F. Roberts, tropical orchids in bloom, viz., *Oncidium crispum* from South America, and *Cypripedium Bullenianum*, from Borneo; by Mr. R. Simson, nickel ore, and rice from New Caledonia; by Mr. Watts, marine algæ recently collected at Queenscliff, and oyster spat from Western Port Bay; by Mr. T. Worcester, shells *Voluta magnifica* from New South Wales, and *V. purpurata*, Solomon Islands.

After the usual *conversazione* the meeting terminated.

SPECIAL GENERAL MEETING.

A Special General Meeting of the Field Naturalists' Club was held on 8th December, 1884, to consider certain proposed alterations in the rules, which were carried after some little discussion.

Rule IV. was amended so as to make the annual subscription for ordinary members fifteen shillings. The "Naturalist" is to be forwarded post free to all such members.

Where there are two or more members from the same family, the subscription for the first is to be fifteen shillings, and for the rest ten shillings each per annum. But the "Naturalist" will be received post free only by the first.

The subscription for junior members, between the ages of 13 and 18, remains five shillings. Junior members do not receive the "Naturalist" without the extra subscription for that journal.

Rule V. was amended by the insertion of a clause, which enacts that the rights of membership date from the time of payment of the first subscription.

BRIEF RECORD OF A NEW SCAEVOLA;

By Baron von Mueller, K.C.M.G., M.D., Ph.D., F.R.S., F.C.S., &c.

SCAEVOLA BROOKEANA.

Erect; branches angular as well as the foliage glabrous; leaves glaucous, sessile, sharply but remotely denticulated or quite teethless, the lower leaves cuneate-ovate; the upper cordate, acute, clasping

and bent inward; flowers axillary, solitary or oftener two or three together, nearly sessile, shorter than the floral leaves; bracteoles minute, deltoid-ovate; teeth of the small calyz deltoid; corolla blue, glabrous outside; its lobes unilateral, their lateral membranons expansions narrow; the tubular portion of the corolla inside short-hairy; the lower portion of the lobes inside chiefly beset with capitellate hair; anthers blunt, unbearded; style below the middle short-downy; indusium ciliolated, but not conspicuously bearded, only slightely downy.

In the vicinity of Israelite-Bay, discovered by Miss S. J. Brooke, Leaves generally 1—1½ inches long, much resembling those of Goodenia Eatoniana, and unlike those of any Scaevola, the upper almost turned unilaterally. Flowers in no way spicate. Flowering calyx about ⅛ inch long. Corolla measuring nearly ½ an inch in length; style considerably shorter. Ripe fruit not obtained.

This pretty and remarkable plant seems systematically best placed near Sc. angulata.

Scaveola Amboinensis (Miq. ann. Mus. bot. Lugd. Bat. I, 210) was recently brought by the Rev. W. G. Lawes from the vicinity of Mt. Astrolabe in New Guinea; from the rev. gentleman's last collections it is also now shown, that in the same papuan region Hypoxis hygrometrica and Arthropodium strictum occur. Pennisetum macrostachyum was lately sent by Mr. Armit from islands very close to the S.E. coast of New Guinea.

It may here passingly be observed, that Dr. H B. Guppy of H.M.'s Ship "Lark" during a recent survey-voyage discovered a species of Quercus (Q. Guppyi) in the Solomon-Group, while procuring extensive botanic collections there. This Oak was only obtained on the highest part of the small volcanic island of Oima, in Bougainville Straits, the elevation being however not more than 700 feet above the sea-level. The tree is a large one; the leaves are of rather firm consistence, provided with stalks of ½—1 inch length, are obovate in form, neither serrated nor denticulated, from 4½ to 10 inches long, from 2½ to 5 inches broad, above glabrous, beneath much paler and beset with very short hair, ribbed by 11-13 ascending strong costae, the primary regular transverse veins between which being also unusually prominent and the veinlets well visible. Dr. Guppy noticed the acorns to be small. The rounded blunt summit of the leaves and the prominent nervature distinguish this Quercus already from most of the numerous Sundaic species; but in these respects it approaches Q. Championii from Hong Kong. This is the first indication of true oaks existing eastward from New Guinea also in islands of the Pacific Ocean. Signor D'Albertis found acorns of two kinds of oaks drifted down the Fly-River, but the cupular involucre of the nuts was washed off.

The nut of one of these species, (Quercus Dalbertisii) is in size and shape similar to that of Q. Pseudo Molucca, but it is not apiculated, thus almost semiovate; the nut of the other species is smaller, almost cordate-hemispheric and slightly pointed, thus not unlike that of Q. daphnoidea.

MALLEE HENS AND THEIR EGG MOUNDS.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, Dec. 8, 1884.

If the map of Victoria be consulted, there will be found the township of Dimboola, on the Wimmera River, about 250 miles in a north-westerly direction by railroad from Melbourne. Twenty-five miles to the westward of Dimboola is situated Nhill, a goodly township in the great shire of Lowan, in the vast Wimmera district. Nhill (corrupted from the aboriginal pronunciation "Nee-ill," meaning the abode of a spirit,) is a flourishing township, and although not more than four years old, can boast of an hospital, mechanics' institute, flour mill, numerous churches and banks, a newspaper, &c. In this locality I elected to spend a portion of my holidays this season, partly to attend to some private business, and partly to pursue my much-loved hobby, and, as this opportunity offered, to study the nidification of the so called Mallee Hens.

When anything is mentioned about the Mallee country, there is instantly conveyed to the mind of many people a vivid picture of desert land, the abode only of wild dogs and latterly of rabbits. Never was there a greater error. It is predicted that in the near future the Mallee country will be among the most fruitful and productive parts of the Colony of Victoria. The Mallee scrub is a species of dwarf gum-tree or Eucalyptus, and 10 to 12 small trees spring from the one root. The foliage spreads over-head 10 to 20 feet from the ground. The wood is hard and durable, the bark as a rule smooth and thin.

This scrub generally grows in a loose yellowish sandy soil, and in long belts varying from half a mile to miles in breadth. Between the belts there are corresponding good tracts of country more openly timbered with bull-oak, and still more thickly in parts where they are interspersed with one or more varieties of gum trees, Murray pine, &c.

As season follows season, these birds are bound to become scarcer, therefore at this present time I am anxious to place before the club somewhat limited remarks on habits of the Mallee fowls, and the wonderful manner in which the eggs are incubated. The remarks are compiled from the published notes of the late Mr. John Gould's

collectors and of Mr. K. H. Bennett, member of the Linnean Society, New South Wales, together with observations and unpublished data of my own.

The Mallee Hen of the colonist, the Lowan of the Wimmera aboriginal, and the *Leipoa ocellata* or Ocellated Leipoa of the naturalist are synonymous names for the bird.

The Leipoa resembles very much in shape and size our greyish mottled domestic turkey, but slightly smaller, more compact and stouter in the legs. It has no wattle about its head, but has a small tuft of feathers falling gracefully back from the crown. The total length is about two feet, including tail nine inches.

They inhabit the Mallee or other dry arid scrub. At present these birds are not found within hundreds of miles of Melbourne. I saw eggs that were taken only recently (1879) in the vicinity of Sandhurst, and others from a species of mallee scrub situated between Melton and the Anakies. I could find no subsequent trace of either birds or eggs, therefore I very much fear they were the last in their respective districts.

Their food consists of insects, seeds and berries and tender shoots of plants. They can subsist without water, but sometimes drink when it rains. Their disposition is shy and timid, consequently they are seldom seen. They are solitary in their habits, uttering at times mournful notes.

Decidedly the most peculiar feature in the economy of the Leipoa is that it does not incubate its eggs in the usual manner, but it places them in large mounds of sand, three to four feet high, where they are hatched by the action of the sun's rays, together with heat engendered by decomposing vegetation placed underneath the sand and eggs.

In constructing a new nest or mound, a slight hollow, invariably a water track or slight gully, is selected in dense scrub. The spot is further hollowed or scooped out by the birds, and filled with dead leaves and other vegetable matter. Then all is completely hidden in sand which is scraped up for several yards round.

The sand mounds are frequently replenished and used year after year. Both birds (male and female) commence to replenish their old mound or construct a new one about June (Mr. Bennett states October) although they do not commence to lay until September. This I imagine they do in order to get the vegetable matter thoroughly saturated by the winter and early spring rains. The water would accumulate in the shallow course or gully, thereby running through and underneath the leaves.

Two or three inches of dry loose sand are thrown over the leaves, then a tier or layer of four eggs (Gould states eight) is deposited, placed perpendicularly on the smaller ends. The four eggs are in the form of a square, four or five inches apart. An inch or two more

sand, and another tier is placed opposite the interstices of the sub-tier, and so on till the complement is reached, three or four tiers amounting to between twelve and sixteen eggs. The chamber or cavity immediately containing the eggs is about fourteen inches from wall to wall.

An egg is deposited every third day. A great amount of toil devolves upon the hen, assisted by her mate, because they have to dismantle and rebuild a greater portion of the mound at the laying of each egg. A mound containing eggs is always left conical shaped in dull or wet weather, but in warm sunny days it is hollow like a miniature extinct volcano, which enables the heat from the sun's rays to concentrate and penetrate the centre among the eggs, and when covered up by the owners at sundown, the heat so absorbed is retained for a lengthened period.

In building and razing the mounds the birds use their strong feet for scraping, but the loose sand is swept up and impelled forward by the aid of their breast and wings.

As previously mentioned, the laying season commences about the beginning of September, and extends through the two following months, consequently as the female approaches the complement of her eggs, in the one mound eggs are found in various stages of incubation. It has not yet been noted what period elapses to consummate incubation. From careful reckoning I should think about six weeks, for the following reasons:—First, my brother Mr. W. R. G. Campbell, of Nhill, last year took a mound with thirteen eggs, and newly hatched chickens. Now, as the bird lays two eggs a week, (or one every other third or fourth day), that would give about six weeks. Second, as some of the latter laying birds, terminate their clutch about the end of November, the last of the young have been observed emerging from mounds about the middle of January.

The eggs, which are laid early in the morning, are placed in their perpendicular position by the parent, with the aid of its feet, scraping up the sand first on one side, then the other. From the position of the eggs, as a natural consequence, the chicks are hatched in an upright position, their legs drawn up in front, with their toes near their beak. As soon as they are delivered from the shell, they wriggle through the running sand, and all at once enter on an independent existence of their own.

Some authorities state that all the chickens are hatched at one time, and that by some peculiar process of nature, the development of the first eggs is arrested till the whole are laid; also the parents are in readiness to attend their young as soon as they appear. Both are misconceptions. The latter may have arisen from the fact that after the first egg is laid, the birds frequently visit the mound, at least once a day for purposes other than to lay, to repair damage that

may have been affected by other creatures, such as dogs, iguanas (which are very partial to Leipoa's eggs), or to open or close the mound according to the state of the weather.

There is no doubt that the Mallee hen can be domesticated with a little trouble. I know instances where young birds have been taken, reared and fed with the farm-yard fowls.

The Leipoa being peculiarly an Australian bird, and so replete with interest, I determined to gain as much personal experience as possible during my limited sojourn at Nhill.

Therefore, on the 22nd October, I, accompanied by a friend, set out for the Lawloil Range, distant about ten miles. We departed immediately after breakfast. It was a most delightful spring morning, with a bracing, clear, and balmy atmosphere. Merrily did our pair of pretty mouse-coloured ponies bowl us along the high road towards the South Australian border, now passing through lovely open timbered country with grass up to the cattle's knees, then where the timber was reclaimed, were acres upon acres of waving cornfields, which so far as I could judge, appeared well grown, and whose healthy and rich green color, betokened a most bountiful harvest.

On one estate alone, I understood 800 acres were under wheat, and after the late favourable and precious rains, competent authorities say it will be one of the finest fields ever cropped.

En route, by previous agreement, we picked up an industrious selector, who formed his first acquaintance with the Mallee and Mallee hens some twenty years ago. He was to be our guide, and a very able one he proved.

After crossing a beautiful pine ridge, and a "crab-hole" flat, we entered the Mallee on the Lawloit Range. To call it a range in a real sense is misleading, for, it is merely undulating rises or ridges of a reddish, gravelly, iron-stone foundation, dry, and almost waterless. Clothed, with a smaller variety of Mallee (*Eucalyptus gracilis*) and other scrubs, notably Melaleuca, &c. It was a most beautiful sight from the buggy seat, to gaze on the face of a perfect sea of foliage, with here and there patches of lovely Mallee blossom, (prematurely blown by the erratic season, it generally blooms in May) appearing like curling wave crests, while in the troughs was Wilson's Melaleuca (*M. Wilsonii*) all ablaze with its rich magenta flowers. Such is the home of the Mallee hen. What a radical change to my last nesting "out" among the Lyre-birds, in the great and never ending forests of Gippsland.

Having secured the ponies, we dashed into the scrub, our selector friend leading, he threaded the scrub just like a black fellow, parting the bushes first with one hand then another. I followed suit as well as I could. However, "familiarity bred contempt." Some of the bushes were prickly, Hakea, and another ugly variety, which caused me to part with fragments of my clothes and flesh. My other friend

took matters more easily by endeavouring to shoot smaller species of some lovely Honey-eaters *(Ptilotis cratitia,)* which abounded in the scrub.

Running down a small water track we struck a Leipoa's mound. It was situated between clumps of Mallee among some Melaleuca bushes, *(Melaleuca unornata.)* The nature of the soil was sandy, and it was swept cleanly up for yards round, even to the uncovering of the roots of the scrub some 2 or 3 inches. Some conception may be formed of the size of the mound, when by actual tape measurement it gave 10 feet across by about 2 feet high, or about 30 feet in circumference, or being approximately equivalent to a displacement of 150 cubic feet. The mound was slightly concave, with a few twigs and sticks thrown over it, evidently by the bird to avoid its detection.

We commenced, on all fours, to scrape like so many dogs. The sand was of a dark grey color, intermixed with minute fragments of dead Mallee and other foliage. This mixture was exceedingly loose, and we experienced no little difficulty in preventing it running back again towards the centre. The mound only contained one egg. The temperature of the sand about the egg by Fahrenheit's thermometor indicated 93°, being 20° hotter than the surrounding atmosphere. The mound had been apparently robbed two or three days before. Our selector friend had three weeks previously abstracted four eggs from it, making the third successive season he had collected eggs from the same mound.

After "beating about the bush" a second nest was discovered. Upon digging to its centre there was revealed "nothing but leaves."

In a third mound we were more successful. It contained five eggs, fresh and beautiful. Its situation was similar to the first, being in a slight indentation or gully on the side of a rise. Its shape and dimensions were also much on an equality. In removing the sand great caution had to be exercised for fear of fracturing the shells, which are extremely fragile. It became intensely interesting after grubbing away for a while to see the beautiful pink apices of the eggs peep out one by one above the trickling dry sand. The safest method to remove them is to displace the sand immediately round them, when they gently overbalance on their sides. After digging about a foot, we came upon one egg, evidently the commencement of the second tier, for directly underneath was the first tier of four eggs. Then four inches of dry sand intervened, succeeded by about eight inches of damp, humid leaves. A most unfortunate accident happened to my thermometor, which was smashed to atoms by coming into contact with some scrub. This was much to be regretted, because I had no means of recording the temperature of the egg chamber, as a check against that in the egg mound.

The eggs were of immense proportions compared with the size of the parent. An average measurement gave $3\frac{3}{4}$ inches long by $2\frac{3}{8}$ inches broad. The color of the eggs in various mounds differs, from a most beautiful soft pinkish-bluish, to a darker color of rich pinkish-red. But all eggs in the same mound are of one tint, except that as incubation proceeds they become stained and discolored. When fresh, they are excellent eating, to this I can bear testimony, having had one fried for a breakfast. It was exceedingly palatable, being rich and delicate, and not strongly flavoured like a domestic turkey's egg. It was a substantial meal, for before it was cooked it turned the scales at six and a half ounces.

These are all the mounds we visited that day. We only obtained a glimpse of one bird as it ran along a survey line.

On another occasion a party of us went out to a different locality in the range and discovered two mounds, One was old and deserted, while the other had evidently been robbed lately. Returning home we had an opportunity of witnessing the curse of the Mallee—the rabbit plague. In driving along a Mallee fringe, clothed with Acacia scrub, the place was literally swarming alive, and it was really astonishing to see hundreds upon hundreds like a wave pass before us as we drove along. It wanted no effort to run over some of the furry vermin in our conveyance. I heard of one poor selector who put in about 60 acres of wheat, but the bunnies had not left him enough to make a single sheaf.

Our third and final attempt after Mallee hens, occurred on the 25th October, when we went again to the Lawloit range, but many miles to the northward of our previous operations. We succeeded in procuring only two additional eggs. The birds kept out of sight. Nevertheless, our scramble was enjoyable, although I must confess it fairly wound me up for the time being.

On the Mallee fringe we soon erected a snug comfortable "Mia Mia." Selecting a triangular clump of Mallee, we slung our hammocks between the intervening stems. barricaded with thick boughs the two weather sides, and on the third side, built a huge fire. The buggy was drawn up, and the horse secured, so we were all snug for the night.

At early evening, the weather was rather foreboding, but as night wore on, it cleared up, and in that transparent atmosphere the stars shone out like so many moons. I have spent many nights camping out in the bush, but never spent such a quiet night—the solitude of the Mallee was something intense, no howling of wild dogs, no chirping of night insects. not even the familiar "mo-poke" of the owl In the morning, the sun had risen upon us some time, before we quitted our hammocks. After breakfast, we drove leisurely home, much delighted and instructed with the night which we spent hung between the Mallee trees.

ANOTHER SCOTCH NATURALIST.

By J. A. H.

In the course of a visit to Scotland some years ago, I was taken to see a shoemaker in the town of D———, Patterson by name. I have often thought since what an excellent picture Dr. Smiles would draw, of the man and his occupations.

I was so much pleased, and interested with my visit, that I am tempted to give the readers of the "Naturalist" a short description of it, as an example of what perseverance and natural ability may achieve.

We found Patterson, an elderly man, with a shrewd humorous Scotch face, seated in an upper room at his work. His wife left her household occupations to guide us upstairs. She seemed to look on her husband's hobbies, and our interest in them, with a kind of amused toleration, her manner saying, "they maun a' hae' little to do takin' up their heads wi sic rubbish!" Up-stairs were the Naturalist's collections. Insects of various kinds, duly impaled and labelled. A case of butterflies, beautifully preserved, and named. Some were gifts from visitors, many exchanges with other collectors, but most had been found by himself as grubs, or larvæ. Having no time in the day, he did most of his collecting by the light of a lanthorn.

The live part of his menagerie, as Patterson called it, was next exhibited. Grubs, &c., in paper trays, on window-sill, or chair.

"You would not think!" the naturalist said, admiringly, pointing to a great loathsome caterpillar, "that a crater like that had sense! He kens me as weel as possible. I neglected his dinner hour yesterday, and my fine fellow crawled out of his box and up my knee, and there he waited till his wants were attended to." But ferns were our host's latest craze, and we were taken to a little back garden to see these, he meanwhile explaining that the carnations and other pot plants for which he had once been famous at the flower shows, had to give place, as he had only room and time for one pursuit at a time. The ferns were in a rough erection of planks with a few cheap window frames let in.

"Aye, they're bonny!" said his wife, rather grudgingly, "but I'd like them better if they had a bit floor at the tap." The place was crowded with a fine collection of ferns, in most luxuriant growth. Each one had its history. This one had been brought by a medical student, from a walking tour to the Irish lakes, that Patterson had kept for five years before it had a frond. "I had it up twa or three times," he said, "to throw it away, but aye decided to gie it another chance. I tried it wat, and I tried it dry, and a'ways; at last I put some bit stanes round it, and look at it noo!" Sure enough the

little plant had twined over and round the stones and was thriving splendidly.

"That again," he said, "is the dearest bargain ever I made. I paid five shillings for that, and I will sell it to anybody for half a croon!" It was a shabby little hart's tongue with frilled edges, I have a frond of it now. He spoke of, and to them all, as his children. "That ane is resting, they sometimes take a good sleep, it does'na do to wake them up too soon!" Again, "I think a lot o' that, I heard they were going to drain a lake, one of the few spots in Scotland where this fern was to be found, and I determined to get a specimen. The place was many miles away, so I started in the evening, got there by the time the water was low enough for me to reach the rocks where the fern grew, and was back with my prize in time to begin work in the morning." Patterson was pleased by our evident admiration, and sending for a pair of scissors, carefully cut for me specimen fronds of nearly all his varieties. "Yes," said he as we bade him farewell, "if somebody wad make me a present of about £50 a year, so that I need'na work at the shoemaking, *I think*—," with a self satisfied wag of the head—, "*I might make a bit o' a Naturalist.*"

THE ORCHIDEÆ OF VICTORIA.

By C. French. Government Botanist's Department, (Part 6.)

(*Continued.*)

P. flavum. (R. Brown.) A very beautiful and robust species, found growing in company with *P. elatum*, and excepting in the color of flowers, which are yellow, it is very like the latter, in height, habit, time of flowering, and in general appearance, and when the plant is not in flower, it is almost impossible to distinguish the one from the other. In the moist flats about Brighton, Cheltenham, Caulfield, Frankston, &c., this species may be found growing in great luxuriance, often 3 feet in height, with stems nearly $\frac{1}{2}$ an inch in diameter, and quite erect. To grow this plant well, it should be treated exactly in the same manner as the former species, and with which it forms an excellent companion plant. In my account of *P. elatum*, I had forgotten to mention the fact of these two plants growing very frequently with their tubers in or near the matted roots of our dwarf grass-tree, *Xanthorrhea minor*, also called by the colonists, Blackfellow's heads, and this peculiarity in their growth renders this plant sometimes difficult of removal, so that it is advisable to take a small spade with you on excursions of this kind, as the ordinary garden trowel is of little use for the larger tubers of these two species. This plant nearly always loses its color when

dried, and becomes a dirty brown or sometimes nearly black, and thus retains none of its former beauty when living. Flowers in October and November. Found also in New South Wales, and in Tasmania.

(*To be continued.*)

NOTES.

While driving along the Hawthorn road, a short time ago, I observed a specimen of the introduced English House Sparrow, in which the tail and tail coverts were pure white. Was this the result of a second growth, the former feathers having been pulled out or lost from disease, or was it a mere aberration while a nestling ?—T. P. Lucas.

ON THE WARBLING GRASS PARRAKEET.

(*Melopsittacus undulatus.*)

By T. A. Forbes-Leith.

When these charming little parrakeets were first taken to England, dealers could not supply the demand at £14 14s. per pair. The colour of the crown is yellow, throat and cheeks with some fine blue spots on each; at the top of the beak the male is blue, the female brown. Breast, belly, and rump brilliant grass green. Black bars and crescents on neck, back, shoulders, &c.; remainder of the wings and centre tail feathers green and blue; shorter tail feathers blue, with yellow band down the centre. Length 7 inches.

They are now so well known, being captured on the grassy plains of Victoria, New South Wales, and South Australia in large numbers annually for exportation, that a general description is all that is necessary.

I have abundant proof that these birds, as indeed most parrots, can live entirely without water. One friend of mine kept a pair for two years in this colony, and another friend a pair for three years in England, and in neither case was water ever supplied or needed. It is a common thing to take them home without giving them water on the voyage.

I have a pair at present, and the male has deserted his mate for the company of a Java Sparrow, which he plays with and teases alternately all day long, to the extreme disgust of his once much-loved companion. These specimens are male and female, both of which I had alive. I have known these parrakeets to breed in confinement, and one pair that escaped in London 20 years ago reared a brood of young in the Temple Gardens.

SPECIAL NOTICE

To Members of the Field Naturalists' Club and Subscribers to the "Naturalist."

In accordance with alterations in the Rules of F.N.C., passed at the Special Meeting held on December 8th, 1884, the subscription to the Club will be increased to fifteen shillings per annum from May 1885, and the "Naturalist" will be forwarded post free to all members.

In order to make the volumes of the "Naturalist" coincide with the year of the F.N.C., it has been determined to commence Volume II. with the May number, and in future the numbers will bear the name of the month in which they are published.

As the current subscriptions to the "Naturalist" terminate with this number, subscribers will oblige by remitting two shillings in stamps for the extra numbers of Volume I. (*i.e.*, January, February, March, and April 1885), to the Hon. Sec., F.N.Club, Mr. F. G. A. Barnard, Kew, at their earliest convenience.

Field Naturalists' Club of Victoria.

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THE

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THE JOURNAL AND MAGAZINE

OF THE

Field Naturalists' Club of Victoria.

The Author of each article is responsible for the facts and opinions he records.

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1884.

FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 12th January, 1885.

The president, the Rev. J. J. Halley, occupied the chair, and about sixty-five members and visitors were present.

A letter was read from the Chief Secretary's Department, in answer to a communication from the Club, stating that special instructions had been issued to the metropolitan police to prevent the use of shanghais in the public gardens and parks of Melbourne and suburbs.

The hon. librarian announced the receipt of the "Southern Science Record," New Series No. 1, from the publisher, and also that the periodicals had been bound, and could be borrowed by the members.

Messrs A. L. Lalor and W. Swan were elected members of the Club, and one lady and five gentlemen nominated for membership.

Mr. H. T. Tisdall, of Walhalla, promised a paper on "The Fungi of the Eastern Slope of Mt. Baw Baw, Gippsland."

The chairman drew attention to the proposed alteration of the close season for quail, and it was decided to write to the Commissioner of Trade and Customs, opposing the alteration.

In response to the chairman's suggestion, Mr. D. LeSouëf kindly undertook to conduct a party from the Club round the Zoological Gardens, on Saturday, 24th inst.

Reading of papers.—1. Mr. C. French contributed the sixth part of his paper on "the Orchids of Victoria," in which he described and gave cultural notes for the following species of the genus Prasophyllum, viz., *P. Austr ile*, *P. brevilabre*, *P. patens*, *P. fuscum*, *P. nigricans*, *P. rufum*, *P. dispectans*, *P. Archeri*, and *P. intricatum*, dried specimens of each of which he also exhibited. 2. Mr. Watts read some notes on specimens of *Coccidæ* mounted as microscopic objects, forwarded by the Postal Microscopical Section of the Royal Society of South Australia, and exhibited the drawings and photographs accompanying them. 3. Mr. F. M. Reader read the introduction to his list of the Phanerogamous Plants of Studley Park. He stated that 58 natural orders and 271 species were represented in the Park, so far as he had been able to observe; of these, however, about 67 species had been introduced. It was decided to publish the list in the "Naturalist."

Several natural history notes were mentioned by members, and created considerable interest.

The following were the principal exhibits of the evening:—By Mr. D. Best, drawer of Australian Coleoptera, family *Buprestidæ*; by Mr. A. J. Campbell, shell, *Triton Australis*, from Portland, also

eggs of White-tailed Kingfisher, (*Tanysiptera sylvia*,) Yellow-rumped Diamond Bird (*Pardalotus xanthopygialis*,) Red-rumped Acanthiza (*Acanthiza pyrrhopygia*), Fasciated honey-eater (*Glyciphila fasciata*), Helmeted honey-eater (*Ptilotis cassidix*), beautiful Parrakeet (*Psephotus pulcherrimus*), Red-bellied Parrakeet (*P. hæmatogaster*), Double-banded Dottrel (*Ægialitis bicinctus*), and Sombre Gallinule (*Gallinula tenebrocosa*), with bird: by Mr. G. Coghill, orchids, *Cryptostylis longifolia* and *Dipodium punctatum* in bloom, from Boroondara, also nest and eggs of Spine-bill honey-eater (*Acanthorhynchus tenurostris*); by Mr. A. Coles, Nankeen Night Heron (*Nycticorax Caledonicus*), and timber-feeding Lepidoptera; by Master E. Dombrain, egg of Wandering Albatross (*Diomedia exsulans*); by Master French, native woman's hair, from Kimberley, N. W. Australia; by Mr. C. French, dried specimens of 9 species of orchids of the genus Prasophyllum, in illustration of his paper; by Rev. J. J. Halley, curious abnormal growth of Native Yam (*Microseris Fosteri*); by Mr. R. Hall, Victorian birds' eggs; by Mr. H. Kennon, coral, repaired by the polyps; by Mr. J. Leadbeater, pair of Australian Fur or Eared Seals (*Euotaria cinerea*); by Mr. T. A. Forbes-Leith, 40 species of British birds, and 10 Australian birds: by Mr. D. Le Souëf, Owl (*Strix scops*), spotted bower bird from New South Wales, also portions of elephants' teeth; by Mr. A. Lukey, native bread from Ringwood, and collared sparrowhawk (*Accipiter cirrhocephalus*); by Mr. F. M. Reader, phanerogamous plants of Studley Park (*Ranunculaceæ—Polygonaceæ*); by Mr. O. A. Sayce, 14 species Tertiary Marine Fossils from older Pliocene beds at Cheltenham; by Mr. F. Spry, Victorian Lepidoptera; by Mr. E. A. Symonds, sombre Gallinule (*Gallinula tenebrocosa*) from Rosherville, Gippsland Lakes; by Mr. H. Watts, microscopic slides of *Coccidæ* from South Australia.

After the usual *conversazione* the meeting terminated.

NOTES OF A SHORT COLLECTING EXCURSION TO THE UPPER MURRAY.

By Messrs C. French and D. Best.

(Read before the Field Naturalists' Club of Victoria, Nov. 17, 1884)

Mulwala, the locality of our excursion, is situated immediately on the New South Wales side of the river Murray, opposite Yarrawonga, and is the station of Mr. Alexander Sloane, who has been settled there or in the district, somewhere about 20 years. The name is aboriginal, but the exact meaning we have unfortunately been unable to ascertain. The station in extent, comprises some 50,000 acres, being about 25 miles from south to north, by 5 miles across. There is also a small township of the same name, said to be

one of, if not the oldest on the New South Wales Murray border, but we saw little of it, and what we did see, did not prepossess us greatly in its favour; certainly we are not anxious to take up our permanent residence there, the society being altogether too limited, although we believe it boasts of a customs officer, and two policemen, and in consequence we should suppose the generally accompanying lock-up.

The climate at this season of the year is simply charming, the atmosphere being dry and clear, and although when the sun rises, the appearance seems to indicate a hot day, a beautiful cool breeze soon springs up, and so tempers the heat that its effect is not felt to be more than just sufficient to be thoroughly enjoyable. Two months later, a very different state of things exists, the heat we were told being almost unbearable, and those of the residents who are in the position to spend the few hottest months in a cooler atmosphere generally do so, the country at this time presenting a most parched up appearance. Of Mr. Sloane's family two are members of our club, and it was through their invitation that our visit was paid, a visit not likely to be soon forgotten by us, for not only were we most hospitably entertained, but what from a collector's point of view was of more importance, we succeeded in securing some remarkably good specimens, more especially those appertaining to botany.

Leaving Melbourne on Friday morning, the 3rd of October, by the 6.15 train, there was little to attract our attention until after passing Seymour, when we were gladdened by the sight of a number of beautiful wild flowers, growing in the railway enclosures, but the rate of speed at which we were travelling, prevented us recognising them, which was the more to be regretted, as they were not afterwards seen. Our journey was continued past Euroa, the scene of the exploits of the once famous Kelly gang of bushrangers, for it was here, if we mistake not, that these ruffians stuck up the bank, and carted away the local policemen. Benalla, and on to the comparatively new township of St James, which is the furthest point we could reach by rail. As we had to stay here for about an hour before the coach started for Yarrawonga, distant about 19 miles, we took advantage of the opportunity to see what the district produced in the way of natural history, but our researches were very poorly rewarded. In crossing a paddock, close to the railway line, we found quantities of a small but pretty composite, the name of which, with those of the other plants collected, have been identified and named by the kindness of Baron von Mueller. Some of the plants here collected, as also portion of those from Mulwala, he found to be of interest, and a complete list of all our specimens appears as an addendum to this paper. Turning over some logs, we were fortunate in finding a few specimens of a very handsome beetle, *Carenum* sp. which were the first of the kind taken by us. Taking our seats in Cobb and Co.'s coach, the fare by which, owing to competition,

has been reduced from 10s. to the low figure of 2s. 6d., we pass through a box forest, and in about 7 miles reach the rising township of Tungamah. This is a place of the most mushroom growth, but boasts two banks and other places of business, with the usual number of churches, as also public houses, at one of which we were only too glad to report ourselves after our dusty journey. A change of horses having been effected, we proceed along rapidly, and here, as during the previous part of our coach road, the country looked most dry and uninteresting, and indeed, no improvement was noticeable right up to Yarrawonga. The only thing collected on the road were several fine specimens of *Swainsonia procumbens*, a most beautiful dwarf herbaceous species, which in places was growing most luxuriantly, and as the driver was obliging, we were able to secure a good many. A vast array of corrugated iron roofs indicated that we were approaching Yarrawonga, the principal township of this part of the Murray district, and on entering it we were met by Mr. T. Sloane, who conducted us to the boat in which we crossed the Murray, and then drove us to the homestead, distant about 3 miles. The mode of transit here over the noble Murray, seen by one of us for the first time, struck us as being of the most antiquated and primitive kind, and without writing to be accused by any interesting novelist as inclined to blow the trumpet of our own colony, we felt quite certain that such a style would not be long tolerated in Victoria. The puntsman was quite an original character, whose self-confident assertion that he could row down either Beach or Hanlan in ferry boats caused us no little amusement. We think, however, we should be inclined to pin our faith on either of the two redoubtable oarsmen named.

On our arrival at about half-past seven, we were quickly introduced to a substantial dinner, to which our long and tedious day's travelling enabled us to do ample justice, and soon after we retired to rest, as we were anxious to get up early and see the process of sheep shearing. This commences at six, and during our stay was in full swing, indeed, it had been so for some time previously, the total number shorn, and to be shorn, being about 35,000. Accordingly Saturday morning saw us at the shearing sheds, where we stayed about an hour, and after an eight o'clock breakfast started on our first day's excursion, and being anxious to get some distance before commencing operations, we availed ourselves of the opportunity to accompany Mr. T. Sloane in his buggy to some drafting yards about seven miles away. We had not proceeded far before we came across a couple of the large Iguana (*Hydrosaurus varius*) common to the district, one being beautifully marked with yellow bands ; but feeling sure of getting some on the day of our intended departure, we did not attempt to capture it, which we now regret, as we did not again see a similar one, although

we did many of the plain coloured, and of these we brought down two; the former although only a variety is much rarer than the latter. These reptiles are protected by the N.S.W. Government, their especial claim to this indulgence being that they are reputed to be the natural foes of rabbits, and anything that will assist in eradicating this pest, is, it is needless to say, appreciated by all squatters or farmers. Whether they possess this virtue, and if so, to any extent, is at least open to question, but what we can certainly assert is, that they have a most capacious swallow, one that we secured, and which measured 5ft. 1in, having in its stomach nearly the whole of the leg of a sheep, the bones of which we brought down and are now here for inspection. At first we felt positive from the size of the iguana's stomach it must contain a rabbit, and we were therefore disposed to commend the foresight of the New South Wales Government, but, great was our surprise and the Messrs. Sloanes' disappointment, when the actual contents were exposed to view.

We may here note one circumstance that struck us as much as anything, and that was the entire absence of snakes; not a single one did we see whilst at Mulwala, and we understand from the Messrs. Sloane that they are not often met with on the run. But the absence of these unpleasant and undesirable creatures was far more than compensated for by the number and variety of birds, especially parrots and the rose-breasted cockatoos, the latter being seen in hundreds. Crows also were everywhere, and their hoarse croak was the first sound that invariably greeted our ears on awakening in the morning, and any sheep unfortunate enough to fall lame, or meet with an accident, would soon suffer the dreadful fate they are subject to from these horrible and remorseless birds, who first pick out its eyes and then leave it to die in agony.

Before arrival at the drafting yards, the buggy left us, and we commenced to reconnoitre the neighbourhood. The country from the home station to this place is very level, and lightly timbered, but said to be very suitable for sheep, which although in such numbers, seemed to be looking both healthy and vigorous. We had been collecting but a few hours, during which time we had found several interesting plants, which were at once placed into the folio for herbarium purposes, when a cooee remind us of dinner, so we accordingly adjourned to the shade of a neighbouring gum-tree, and spread out our stores, when we found to our dismay that the flies had forestalled us, and to use a bush phrase, the meat was literally alive. This however troubled us but little considering our newly acquired "Murray appetites". so we made up for the loss by ravenously devouring children's favourite morsel, bread and sugar. Dinner finished, we drove out towards the Murray pine scrubs, which were soon reached, and interested us greatly, never having previously collected in this sort of country. A halt was here made, and a

cockroach hunt suggested and improvised. This, we can assure our friends, was no ordinary cockroach hunt, for these bulky and somewhat repulsive looking fellows, burrow to a depth of nearly 2ft. into the sand, and forcibly reminded us of a wombat hunt on a small scale. We were fortunate enough, after digging for our bare lives, to find several of these Titanic cockroaches, which were speedily bottled up for our collections. White ants seem here very plentiful and doubtless greatly assist in the demolition of the native timber. As we had some ten or twelve miles to return to the station, we face homeward, collecting on our way thither, some very pretty plants, the most showy being a species of Cassia, *C. eremophila* a plant which seems to thrive on dry hard soil, a species of Hakea, nearly bored through by the larvæ of some insect, and several other small but interesting plants, which will be further mentioned as we proceed. This, and the two following evenings, were spent very pleasantly with the Messrs. Sloane, their family and visitors, all of whom seemed to take much interest in the results of each days sport.

The next morning we again made an early start, on this occasion being accompanied by the two Messrs. Sloane, our destination being Savanake, the name given to the out station, distant about 20 miles. Proceeding along we came across our first Quandong tree, *Santalum acuminatum*, which to our great delight had a few ripe fruit on the top branches, and these we were not slow in securing. We afterwards saw several of the trees, but only one was in anything like good bearing, but the fruit was, unfortunately for us, quite green. The Quandong here seems to be fast dying out, the cause being generally attributed to the clearing off for the improvement of the runs for sheep. The latter part of our journey lay on roads cut through the thick pine scrubs, and here were seen a number of kangaroo, some being of a large size, but not having a rifle, we were unable to secure a specimen. These, to our minds at all events, graceful and pretty animals, are being ruthlessly destroyed everywhere, and the time is probably not far distant when it will be a rarity, more especially in Victoria, to see them in their native haunts. Here we also saw several nests of the Eagle-hawk, *Aquilla audax*, but, of course, these were far too high up, and in altogether too inaccessible places for us to attempt taking them. Small plants seemed to be scarce, only a few annuals and composites being seen. Arriving at Savanake, where on a pretty and commanding eminence a substantial and commodious residence is in course of erection, we stayed a short while for lunch, and afterwards did a little botanising in the surrounding pine scrubs, collecting a few orchids, amongst them being *Pterostylis rufa, var. Mitchelli*, this being considered somewhat of a rarity here. We think it worth mentioning that nearly the whole of the timber employed in the construction of the house is of Murray pine, which emits a

pleasant odour, something akin to that of sandalwood. It has a fine close grain, and when nicely varnished or polished, assumes a beautiful dark color which makes it very suitable for indoor work.

Being now nearly 20 miles from the homestead, and the sun getting low, we made a start for home, our friends making a considerable detour from the road by which we came, for the purpose of affording us an opportunity of visiting some of the more interesting places in the neighbourhood. After a drive of a few miles, stopping occasionally to collect a few plants or to turn over a log in search of insects, we came to a singular looking pile of granite rocks, on which there was a natural basin holding water, and this depression was shaped much like a boot, hence it is called by the residents of these parts, "The Boot." We found little of interest in the way of plants here, a few fine specimens of *Grammitis rutæfolia*, *Cheilanthes tenuifolia*, two well known rock ferns, and some plants in bloom of *Isotoma axillaris*, a pretty blue flower, and a large patch of *Drosera peltata*, were all we could find near the boot rocks. Travelling towards the station we saw large numbers of kangaroo, as, also pair of very fine emus, who strode off at a rapid pace on the approach of the buggy. A little further on we came across quite a flock of native companions, *Grus Australianus*, which seemed to be quite at home amongst a large number of sheep, but soon flapped their wings and disappeared. We here learned what we were not previously aware of, viz., these birds soar to a great height, and ascend we were told as high or even higher than the eagle-hawk. We were now seeing sights which we had long wished to see, these curious birds in their native haunts, and although late, we could not resist the temptation to ascend a hill, and see also for the first time the real and most formidable foe of our explorers, viz., Spinnifex, *Triodia irritans*, and the appearance of the plant seemed to quite justify its specific appellation. It is singular that this one patch, not more than a few yards in diameter, is said to be the only one in the whole district. We were still some distance from home, and as the sun was fast disappearing we made straight for the station, which was reached shortly after dark, and this was probably the most enjoyable day spent during the trip.

(*To be continued.*)

TRIP TO FIJI.

Part 2.

At our last meeting we parted on the Upper Rewa. The river in places was becoming more shallow. The native boys had to wade, dragging the canoe over the rapids. The cocoa-nut palm had dis-

appeared, or if a straggler maintained a hold here and there, as a rule it was sterile. Numerous other palms had taken its place in the copses or on the wooded hills. New varieties of ferns kept making their appearance. Choicest convolvulus were in rich profusion. A glow-worm very like the English species, but broader in the centre and more star-like in shape was not uncommon, shining brightly in the darkness of the night. The English glow-worm is the female of an ordinary looking beetle. I believe the Fijian to be an allied type, though I did not succeed in capturing the male. Why is she thus illuminated in the night? In Nature we see a series of designs. And each design is repeated, with multiple variations, in the different types or species of organic life. The male and female of each kind must recognize and attract each other. Among a very large number of birds, the male is gaudily plumed. He is arrayed in brilliant colours, or is adorned with crest or collar fringe. Sometimes he is talented with power of song. And so the female looks and loves. Among the mammalia, the male is generally more powerful—he is a leader born. The female is more delicate and graceful, and is born to be protected and loved. The females are more shy and coy. How then shall they attract the notice of their lords. In the glow-worm, where the male has no great attractions, the female carries with her this beautiful bewitching light. Many moths and flies where the male is sombre-looking and non-attractive have the females without wings. These emit an odour which will draw their species for miles. On a sunny day you watch a small ant-like looking creature as it slowly crawls along in the sunshine. Before you know what is the matter, a large winged bee or fly, three or four times the size, has flown past, and almost as quick as lightening caught up the inconspicious looking creature in its grasp, flying off with it, together visiting flower to flower. And so throughout creation, in an evolution of variations the design runs, until it stands out prominently in reason-endowed man. Man is born the lord and master, woman is born to be protected and loved. Man stands out in his native dignity and strength. Woman, as Darwin observes, "resorts to the aids of art in the shape of ribbons and flowers, and bustles and flounces, to render her more winning and attractive."

Fiji is specially rich in dragon flies. All sizes, from half an inch to a stretch of even five or six inches. Many of them are beautifully coloured, but lose their colour in drying. Some have the wings beautifully darkened by a thickening of the network. The Ichneumons and many species of hymenoptera and diptera greatly resemble Australian types, In damp places, mosquitoes are very numerous and troublesome. Their nature is unchangable. They still remain notorious cannibals. I did not go among the mountains of the Upper Rewa. On my return I passed through one of the mouth

estuaries of the river, bounded on either bank by the mango tree. This is especially a tree of the tropics. In colder latitudes, carices and other plants hold together vast tracts of sand. Reeds and allied plants, with sphagnum mosses, mat together boggy grounds. But in the topics, the mango is specially fitted to hold together the crumbling shores. Its roots spread widely, and will grow in and under water, and in the net-like interstices there is a hold for soil and other material, and so this endless network offers a substantial obstacle to the approaches of sea and river.

I paid a visit to Bau. This is a single hill, connected with Viti Levu by a low flat, and is an island only at high water. The house where I was staying was at the top of the hill, and had a window on either side of a two-roomed apartment, looking out pleasantly on the sea. The windows were open, a pleasant breeze was blowing through, when suddenly a vivid flash of green drafted past me. Imagine my astonishment on finding it to be a beautiful parrot, flying through the house from one verandah to the other. This, and a small yellow crested white Cockatoo, from the New Hebrides, were flying about the house and grounds quite tame and unmolested. It was a grand fête day at Bau. The Queen presented me with an orange. Such really represents the intelligence of these people. They are on a level with English school-boys. The good lady had been out in the morning with her maidens fishing, and hospitably sent me a portion for my supper, a compliment I fully appreciated. There was to be a grand meke or dance. Hundreds painted with red ochre and begrimed with black charcoal, most gracefully went through many of their native dances. The men dance alone. A number grouped together play with bamboos. The dancers walk, run, or dance, imitating by movements of the body, the ebb and flow of the waves of the sea, fighting, spearing, clubbing, and other lessons of nature or social life. It is quite astonishing what a bewitching influence the symmetrical and graceful motions of so many hundreds exercise upon the onlookers. No European soldiers, however well-drilled, can be more accurate in time and measure.

Opposite to Bau is the beautiful island of Viwa. It is one fairy-land of hill and dale. It is well wooded. The beautiful Tree Orchid, Dendrobium Tokæ, Reichenbach, with its yellow clusters, gracefully hangs among Selaginellas and bright green ferns. My time in this beautiful island unfortunately was limited. In a shaded hollow, I took a number of a beautiful Mazarine blue butterfly. The air was fragrant with the odour of aromatic trees. A short time ago it was the home of most abominable cannibalism; now it is the abode of beauty and peace. In its configuration, in its beautiful fern glades, in its sylvan retreats, in its sunshines and shadows, it is surely ant Eden on earth. Near the summit of a gentle slope, I saw a most

touching sight. It was a small graveyard. There was the grave of one of the pioneer missionaries, who died at his post. Here, and side by side, an old cannibal chief, a little child, a reformed chief, a christian native. The graves are marked off by wooden rails. Some are covered with stones in different colours and in simple patterns. The Dracæna in generally planted in lieu of our ancestral willow. The picture was rude, simple, but touching.

I was rowed in a boat by a crew of seven to the island of Ovalau, a distance of some 35 to 40 miles. On our journey, I landed on the Island of Motariki. This is somewhat flat, is less frequented by the white people and has not many inhabitants. There was a very good sprinkling of shells on the shore, and large numbers of the young of a delicate Pinna. I had to be carried on shore, and after an hour's rest to the boat again. We passed a beautiful white coral-sand island. I pressed hard to be allowed to land. My efforts were in vain At length the chief man imitated the boat bumping, or as he said, bung, bung, bung, against the reef, and I had to rest satisfied. In due course we made Ovalau. It is a mountain rising 2000 feet from the sea. It has a narrow coast line, and extends for 8 miles across, and is some 12 to 14 miles in length. The scenery at Levuka is simply splendid. World-wide travellers acknowledge it to be, for its limits, the finest scenery known. It may be described as a mountain with a central broken ridge or narrow table-land, and 2000 feet high. The sides are hollowed out into ravines and deep hollows by numerous land-slips. These again, have been modified and worn by the numerous mountain torrents. The central ridge or table-land as it would at first be, is itself divided into steep and rugged peaks by land-slips or upheaval. The whole island bears evidence of long continued and violent volcanic action and earthquake. Perhaps in no other part of the world are so many mountain spurs, wild and rugged precipices, steep slopes, deep dells, sunny hollows, and wild watercourses interspersed so thickly together. Rocks have been thrown down from the mountains into the hollows below. And rocks are piled on rocks. Many still appear like a mass of ashes just thrown out of an iron furnace. You can climb almost up to the perpendicular. The native boys run like cats over steeps 70° to 80°. If you wish to see a beautiful sight, walk to the topmost house in Levuka early in the day. Behind you, and on either hand are the towering wooded hills, the deep chasms, the noisy waterfalls. At your feet and away before you stretches the calm, blue sea. One mile from the shore the white breakers mark the outline of the coral reef. The whole reflects a beautiful rainbow. A little schooner or a native canoe lazily waits for the wind. Around in the distance are other islands of the Fijis, pretty and varied in outline. The sun is shining pleasantly. The heat is not overbearing. You recline on the grass, and watch the white seagulls

as they play; or the hawk as it hovers over the deep ravines of the mountain.

I determined, invalid as I was, to attempt to ascend the mountain. I got a native as guide ; a man about 30 to 35 years of age. We started soon after seven in the morning. Upward, onward, upward. But our progress was slow. In many places I could not trace the path. An ascent upwards, and a descent again into another shady dell. Now on the side of a steep, looking down hundreds of feet into the chasm below. Now climbing up the face of a perpendicular rock, or again dropping down a precipice by the aid of limbs of trees and vines and allied creepers. Falls often were my lot. The soil was of a rich red clay, and most provokingly slippery, Everywhere vegetation was most rank. New ferns and flowers met the gaze as we continued to ascend. After two to three hours walking, we came out on a spur as it appeared only a mile from our starting point. A very beautiful and rare blue butterfly, flitted in sunny recesses. A dark bronzed moth here and there flew across our path. A most delicate white swallow-tailed moth allied to the English swallow-tail, now and then was disturbed from the trees overhanging some babbling brook. About two o'clock we reached one of the highest spurs, 2,000 or 2,100 feet. But alas, as we began to descend, fearful precipices barred our way. The guide would not go on, and so after dropping, slipping, crawling down some 200 or 300 feet, I had again to ascend. I rapidly filled my portfolio with botanical specimens. One Dendrobium I found, was a rich gem. It had only been discovered a few months before, had never been described, but was named in Kew, after Sir A. Gordon. And so I was just too late. I wanted to cross to the Lavoni Valley. After another two hours toilsome descent and ascent, we came to the pathway commanding the pass crossing to the Lavoni Valley. I had gazed upon the valley from the high peak above, and oh, what a picture. A grand, deep, precipitous ravine, thickly wooded, and one mass of luxurious vegetation, and gradually sweeping to the sea. At four o'clock, I had been ascending for some time the bed of a mountain torrent. I had to climb over huge boulders, jump from crag to crag, drag myself along by climbing tendrils, cross and recross the stream continuously to gain the scantiest footing. And now before me was a precipice some 80 to 100 feet high. Up here, says the guide. What, no way round,—no road, no foot-path ! No. But how can we go up there? Oh, drag up by the hanging climbers. And when we get up, what then—another hill, another long ascent, and then down into the Lavoni Valley. Pardon me, ladies and gentlemen, after nine hours marching and climbing under a tropical sun, I felt that to climb would be to rush into suicidal death, and so I summoned up my moral courage and resolved to submit to defeat. I gave up my efforts to reach the

Lavoni Valley. My guide, born on the island, had lost his way and so we had wasted some hours in fatiguing toil. And after all, this was the path. Some short time ago the natives had killed a chief by treachery and were carrying him back by this track for the purpose of bringing him to the oven. When they got to this precipice, they were baulked, and so flung the body headforemost as the only way of transit. Very few white men and not many black men have crossed this precipitous ridge leading to the Lavoni Valley. And in the old heathen days, the tribes in these hills could defy all the others. Their position was simply impregnable.

Before leaving Levuka, I had a day on the coral reef. I was in the water some hours breast deep. I had on a pair of boots specially provided, as the coral cuts both feet and boots. A hatchet was needed to chop away the pieces of coral. The sight from the boat of a coral reef is one not to be forgotten. It looks like one vast forest. Branches of coral like limbs of trees spread in every direction. The living polyps are of almost every hue. Blue, red, green, orange, yellow, and so accounting for the beautiful rainbows seen over them from the distance. Numbers of dark-blue star fish play about. Myriads of tiny blue fish swim in and out among the branches. Large and small fish, blue and scarlet and of almost every colour lazily glide about. In recesses many species of Echinoderms or Sea Eggs linger, ever ready with their spines to tear the flesh from the too prying fingers. Various species of Beche de mer move backwards and forwards with the currents. Many rayed star fish crawl into the cracks and crevices of the coral rock. Numbers of small corals grow on the newly formed limestone. You crack off a piece with your hatchet. It is full of life. Every blow you give reveals new and hidden wonders, A lithodonta falls out from the very centre. How could it get there, a close prisoner —a bivalve mollusc. And so like the species found in the Coralline Oolite of England, and proving a like condition in the two periods. Cones and Crabs and Cowries and numbers of tropical shells may be got by diving among the coral reefs. Sponges, and numbers of the lower types of animal life are plentiful. Seaweeds are scarce, and those mostly coarse Fuci and allied genera. The coral reef and its surroundings are a world of life. It must be seen to be imagined.

On my return voyage I was greatly interested by two porpoises. The sea at night where disturbed was highly phosphorescent. Two porpoises were swimming for a distance with the ship. As they disturbed the phosphorescent produced elements, they resembled the onward progress of sky rockets. One long wavy line of fiery sparks, a reminder of the wondrous sea-serpent. At last they crossed under the ship and disappeared. On the whole I had a most enjoyable trip, enjoyed myself immensely, and gained vast stores of knowledge and experience, to say nothing of the haul of curios and natural history specimens.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 9th February, 1885.

Mr. D. Best occupied the chair, and about fifty members and visitors were present.

A letter was read from the Bendigo Science Society asking the Club's co-operation in getting the protection of the law extended to magpies, magpie larks, curlews, and laughing jackasses. Copies of a paper read before the Society in support of the protection of these birds, were also forwarded for the members perusal.

The hon. librarian acknowledged the receipt from Dr. Usher, of Ballarat, of copies of his Zoological and Botanical Charts for students.

Mrs. C. A. Topp, Dr. MacGillivray, Messrs Donald Campbell, W. Ferguson, — Nicholson, and Jno. Smith were elected members of the Club, and five ladies and six gentlemen nominated for membership.

Papers were promised for future meetings by Rev. A. W. Cresswell, "Notes on a Trip to Griffiths Point;" by Messrs Lucas and Gregory, "An overland journey to Wilson's Promontory;" and by Mr. C. French, "Orchids of Victoria, Part 7."

Papers read.—1. Mr. Tisdall contributed a paper on the "Fungi of Mt. Baw Baw," in which he described about twelve species of the genus *Agaricus*, and being accompanied by water-color drawings, (natural size), with magnified sections and parts, enabled the members present to easily follow the writer's remarks. The paper concluded with general directions as to the selection of edible fungi. 2. Mr. A. J. Campbell read a paper on "The Protection of Native Birds," in which he suggested slight alterations in the close seasons for Lyre-birds and Quail, and the extension of the protection of the law to about 200 additional species of native birds. His remarks caused considerable discussion, more especially with regard to magpies and parrots, whilst some extracts were read from the paper from the Bendigo Science Society, by Mr. Nancarrow, (also a member of this Club) giving his views on the subject. In conclusion, Mr. Campbell gave notice that he would propose at the next meeting, that a deputation wait upon the Commissioner of Customs, to request him to alter the schedules of the Game Act as suggested.

The chairman drew attention to the approaching annual *conversazione*, and urged members to make an early start in the preparation of exhibits.

The following were the principal exhibits:—By Mr. F. G. A. Barnard, Larva of moth *Chelopteryx Colsii;* by Mr. A. Coles, five South American birds, and pair of Queensland Cuckoos; by Mr. J. E. Dixon, sixty species of Victorian Lepidoptera, and six species of Neuroptera; by Mr. C. French, paradise plumes, lady's dress, and native adzes from New Guinea; by Mr. H. Kennon, stone and iron axes from New Zealand; by Dr. Lucas, eggs of iguana from Pakenham; by Mr. F. Reader, plants from Studley Park, (*Leguminosæ-Compositæ*), rare plants from Scotland, and different stages of fungus, *Polyporus* (*Resupinaria*) *velutinus, Fries.*

After the usual *conversazione* the meeting terminated.

NOTES OF A SHORT COLLECTING EXCURSION TO THE UPPER MURRAY.

By Messrs C. French and D. Best.

(Read before the Field Naturalists' Club of Victoria, Nov. 17, 1884)

(Continued from Page 139.)

Monday being our last day at Mulwala, we made the most of our time, examined the lagoon for water plants, but saw few excepting those found near Melbourne, as *Azolla*, *Chara*, *Myriophyllum* &c., all of which were out of our reach, but, these lagoons would, we think, well repay any person wishing to properly collect the Algæ and Desmids.

Starting after an early breakfast, we were again driven out some miles, and having had lent to us an excellent breech-loader with cartridges, we managed to make our first shot (from the buggy) at a native companion, but were unsuccessful in bagging him. Birds were plentiful although many of them were somewhat shy, and the rose-breasted cockatoos defied all our stragetical efforts to approach them nearer than from 100 to 150 yards. We shot, as before stated, a sample of fine Iguana, several specimens of the Green Leek Parrot, one of our most beautiful species, also several other kinds which we show you here this evening. We much regretted not having brought a muzzle-loading gun with us, as our cartridges were far too heavy for small birds, of which there are here some most interesting species. Insects were very scarce, and but few were collected, and of plants we obtained little else than the same kinds

gathered on the previous day. On our way to the station, we tried without success to "stalk" a large flock of Ibis, but they were either too wary, or we were not sportsmen enough to get within range, and they wisely took their departure.

A few miles before reaching the station we passed over some plains, on which were growing some very pretty composites, one being the *Helipterum hyalospermum*, and the other *H. corymbiflorum*, both of which would be well worthy of cultivation or for floral decorations. Reaching the station about 7.15, we spent the evening in packing up our specimens, &c., for an early start, also in looking over the natural history collections of the Messrs. F. and W. Sloane, with which we were much pleased. Having had a long day, we went early to bed, and after a good night's rest, we were up at five o'clock next morning, made a short tour for a couple of hours, had breakfast, and took leave of our kind and hospitable entertainers, and were driven by Mr. T. Sloane to Yarrawonga, passing on our way the Mulwala racecourse, and its somewhat novel and most primitive grand stand. Our old friend the puntsman was again interviewed, who put us across the river in the same agile manner as before. It is but fair to remark, the Yarrawongites have at last awoke, and a new punt has been constructed, which will no doubt compensate for all past inconveniences. Since our return we learn that the grand new punt is in full working order, but this intelligence is tinged with regret, as the services of the puntsman have for some unknown reason been dispensed with, probably on account of his too great activity. We are afraid we shall not look upon his like again.

The morning of our departure from Yarrawonga was very warm, the return journey by coach presenting little of interest until we were approaching Tungumah, when one of us who occupied with the driver, the box seat, sighted close to the coach track, a very fine specimen of the Brown Snake, *Diemenia superciliosa*, which to our great astonishment made no attempt to escape, and the driver having obligingly stopped the coach for a few minutes, a blow from a stick quickly disabled his snakeship, who previously to being struck seemed strongly inclined to be vicious, and made several abortive attempts to bite. Having "bagged" our prize, we again started, and a few yards ahead, another of the same species was seen, which on examination was found to have been killed a few hours previously, and was no doubt the companion of the former one. The two were then tied in a handkerchief, and placed in a portmanteau, much to the surprise and evident disgust of the driver and our fellow passengers, who could not divine our intentions of taking care of such "vermin," and these two were the only snakes seen during our absence from Melbourne. Another singular incident was, that

during our enforced stay at St. James, we again searched for insects, but after spending some time in turning over hundreds of logs, we were unable to find a single specimen, whether the few days of warm weather had sent them burrowing into the ground we cannot say, but the fact remains that there were none to be seen. Half-past ten on Tuesday evening saw us again in the city of the south, and it was not long before we reached our homes, and quickly to bed, there to recover from the fatigues of a fourteen hours journey, and fit ourselves for the resumption of our usual and necessary occupations at 9 o'clock on the following morning.

Birds of Mulwala.

Platycercus flaveolus, Yellow-rumped Parrakeet; *P. eximius*, Rose-hill Parrakeet; *P. Pennanti*, Pennant's Parrakeet; *Polytelis Barrabandi*, Barraband's Parrakeet; *Calopsittacus Novæ Hollandiæ*, Cockatoo Parrakeet; *Psephotus hæmalonotus*, Red-rumped Parrakeet; *Grauculus melanops*; *Grallina picata*; *Pomatorhinus temporalis*; *Cracticus torquatus*; *Philemon sordidus*; and *Struthidea cinerea*.

Reptiles.

Hydrosaurus varius and *Diemenia superciliosa* (Brown Snake).

Plants.

Acacia microbotrya var., monocephala, *Acacia lineata*, *Acacia sclerophylla*, *Arthropodium minus*, *Ajuga australis*, *Brachycome chrysaglossa*, *Brachycome multifida*, *Bossiæa species*, *Calotis scabiosifolia*, *Cynoglossum suaveolens*, *Caladenia carnea*, *Caladenia Patersonii*, *Cassia eremophila*, *Craspedia Richea*, *Cheilanthes tenuifolia*, *Carex species*, *Daviesia ulicina*, *Daviesia ruscifolia*, *Daviesia corymbosa*, *Diuris maculata*, *Dillwynia ericifolia*, *Drosera peltata*, *Dodonæa cuneata*, *Eremophila longifolia*, *Eucalyptus melliodora*, and two other *species*, *Frenela robusta*, *Goodenia pinnatifida*, *Galium Gaudichaudi*, *Grevillea ericifolia*, *Helipterum corymbiflorum*, *Helipterum dimorpholepis*, *Helipterum hyalospermum* *Helichrysum apiculatum*, *Juncus pallidus*, *Leptomena aphylla*, *Luzula campestris*, *Myriocephalus rhizocephalus*, *ophioglossum vulgatum*, *Pterostylis rufa*, *var. Mitchellii*, *Pterostylis mutica*, *Prasophyllum patens*, *Pultenæa species*, *Pimelea glauca*, *Pimelea stricta*, *Ptilotus spatulatus*, *Poa cæspitosa*, *Scirpus cartilagineus* *Styphelia urceolata*, *Solanum simile*, *Teucrium racemosum*, *Triodia irritans*, *Vittadinia australis*.

THE PROTECTION OF OUR NATIVE BIRDS.

By A. J. Campbell.

(Read before the Field Naturalists' Club of Victoria, 9th Feb., 1885)

This is a subject of national importance and essentially within a field club's province.

The Anglers' Protection Society instruct and advise the Government from time to time in piscatorial matters. Lately the Senators of the United States of America, recognising the usefulness of such clubs, appointed a commission consisting of delegates from the leading Entomological Societies to inquire into and report upon a certain insect plague. Therefore, it is a fit and proper proceeding for our Field Club to take upon itself the liberty of bringing under the notice of the Administrator of the "Game Act" certain anomalies that exist in the protection of our indigenous birds, in addition to others which should be protected. Towards this end I humbly beg to place at the Club's disposal any knowledge I possess in this particular department of our natural sciences, which I have been studying for years.

However, there are many items to be taken into careful consideration. First, our original "Game Act" was framed nearly twenty-one years ago, when the colony was, comparatively speaking, young, and not so much was understood regarding the habits of our native birds, as at present, It may be of interest to some to learn that the original "Act" was created 20th April, 1864, for little over three years, consequently it expired 18th June, 1867. The present Act, which is a facsimile, with the exception of being perpetual, came into operation 6th September, 1867.

There is a circumstance that greatly interferes with our birds, and to which they do not appear, like the birds of Europe or America, to be able to adapt themselves, viz., the alteration of the physical features of the country by the advance of civilization and cultivation. Then there is the havoc made with indigenous forests—their natural resorts. Our Land Administrators seem to alienate our valuable timber lands without framing the slightest regulation against their wanton waste. Another instance, the reclamation of many swamps cannot but seriously affect numerous members of the aquatic tribe, by demolishing their native haunts.

Rabbits over-run large tracts of our colony. Various modes are adapted for their destruction—one extensively used is poisoned grain, which is often taken by some of our beautiful birds. It was only recently I heard of a poisoned locality strewed with carcasses of rabbits intermingled with a few birds. Therefore, it would appear, taking all things into consideration, our birds have a hard struggle for existence, when may be added amongst their enemies the droves of "pot-hunters" who rove over the country at holiday times, and, who blaze away at anything that resembles a feather—from a tom-tit to a jackass.

Our "Game Act," be it said, is almost a dead letter. Whoever hears now-a-days of prosecutions under that law, although it is transgressed against almost every other day (Sundays included) during close season? Such transgressions are decidedly blamable in the first place, but in the second the police authorities, who as a rule, shamefully and openly neglect this law of our land. Of this, I possess abundance of evidence, but shall cite only one case. A flock of five Emus, (a noble bird fast becoming extinct), accidently passed a certain township. Away went every available horseman and dog in full chase. The poor Emus very soon licked the dust in view of the remaining inhabitants—and the police.

To simplify the subject I have carefully drawn up a tabulated statement showing the indigenous birds protected under the "Victorian Game Act"—birds proposed to be proclaimed—and indicating how these birds are protected in the adjacent Colonies, *i. e.*, New South Wales, South Australia and Tasmania. From our stand-point as naturalists, here is another string to the bow of federation. What is the use of a colony passing an enactment that it shall be unlawful to kill or capture a scheduled bird, when you may with impunity step across the border and destroy that bird? Or you may go to that strip of disputed territory, "No Man's Land," between Victoria and South Australia, and blaze away as long as powder and shot will last An incident of this nature came under my own observation. In 1877 I happened to be officially stationed on the river Murray, near Wentworth, New South Wales. It was close season on the Victorian side, while, by some oversight of the New South Wales statesmen their Game Act had lapsed. One day the Victorian trooper accosted a person on his territory with a double-barrelled fowling piece and a brace of fine ducks. He said, "My fine fellow, we've got you this time." "No you don't" replied the other with a cynical facial expression, "they're New South Wales' ducks, I swear I followed them across the river."

In the tabulated statement, I have preserved the order and common names in the Club's published list of Victorian birds, which, if individual members would study, it would greatly assist them in

comparing the statement. Of the 390 mentioned on the Club's list, only 39 are protected by law. I now propose proclaiming about 200 additional species. It may be argued if the birds are duly proclaimed, not every one can discern the difference between a Podargus and a Grallina. Well, every person should possess sufficient knowledge of police law to keep out of its clutches. The Public Library and Museum are always open, where may be studied the beautiful plates and specimens of all our native birds.

Of the birds already protected, it is proposed to alter the close season in two instances, viz., for the Lyre-birds and Quail, by extending the beginning and curtailing the end of the season for the first mentioned bird, and *vice versa* for the other. In a paper I had the honor of reading before this Club 8th September, 1884, it will be remembered that I proved conclusively that our Lyre-birds commenced to breed the month prior to the prohibited season, and I see no reasonable cause why they should be protected later than the end of December. With regard to Quail, what happened lately will be still fresh in our memories, how a deputation waited upon the Hon. the Commissioner of Customs to request that the close season for Quail might be abridged, and how the Argus columns contained numerous letters from experts denouncing such a proposal, and stating if any alteration were made it should be extending not curtailing the prohibited season. Then followed a large and influential anti-deputation of sportsmen, naturalists &c., who interviewed the Commissioner. After hearing the other side, that honorable gentleman prudently allowed matters to remain as they are at present. There is no doubt that Quails are late breeders. In this colony the Painted Quail or Varied Turnix commences about the end of September or beginning of October. The Stubble and Swamp Quails commence in November or December, terminating generally in January. I have observed birds sitting at Christmas time. Many of my country friends can attest to the same occurrence. Only this season a person informed me that during Christmas week, he had flushed a Swamp Quail from her nest in his garden. It is certainly evident that many birds are not fit to be shot by the 1st February. Therefore, it is proposed to extend the close season another four weeks, thereby also assimilating it to that of New South Wales.

Taking a glance over the new birds to be proclaimed, the Hawks head the list. Here we may meet with a little opposition, as these birds are generally looked upon as vermin, but I can assure members who are not acquainted with their habits, that they are not vermin, but vermin destroyers. They are nowhere abundant now, consequent upon a continual war waged against them as supposed evil doers.

Suppose a Hawk does swoop down and a farmer lose a prize rooster or a fat duck now and again, what is the loss, to the incomparable good performed by that bird in destroying such destructive vermin

as snakes, rabbits, rats, mice, &c. Is a laborer not worthy of his hire? It may be a pigeon house is rudely disturbed by a beautiful Gos-hawk, but our favorite domestic cat may often produce more mischief. Some of the smaller members of the *Raptores* family only hawk for insects &c., such as the lovely Letter-winged Kite and Kestrel, in fact, there is some mention of introducing the Kestrel into New Zealand as a vermin destroyer.

Amongst true farmers' friends may be reckoned the Owls, but these nocturnal flyers, like the Hawks, are a persecuted race, although they are of inestimable value as vermin killers. The great mice plague which over ran the Western District last year, may be partially attributed to the extinction of the natural enemies of such vermin. Amongst these enemies foremost stand the Owls. It is rather a remarkable coincidence, that in the Wimmera district, where the mice and rabbit scourges are rampant, there is a marked scarcity of both diurnal and nocturnal birds of prey. The Vermin Board Conference which met lately resolved to commence to-morrow united and simultaneous action towards the extermination of rabbits in the colony. Another resolution was that the native cat, tiger cat, domestic wild cat, and iguana should be declared natural enemies of rabbits, and protected from destruction. But a great error has been committed in totally over-looking the greatest natural enemies of the troublesome rodents, viz., the Hawks and the Owls.

We now pass on to the numerous useful insectivorous birds, such as Night-jars, Swallows, Kingfishers, Flycatchers, &c. Some 36 species were figured on a descriptive chart of insectivorous birds which were to be protected by law. The chart was issued some years ago by the Education Department for use in the State Schools. But strange to say, with one exception, none of the birds have been yet proclaimed.

Robins and others of the gayer plumaged varieties should be also protected against the unnecessary slaughter caused by their beautiful feathers being highly prized by "foolish fashion" for adorning the costumes of the gentler sex.

In placing Finches, Parrots, &c., under law, it must be borne in mind in what respect it may affect dealers and others, because such birds are becoming general favourites in our avairies, and the fifth section of the "Act" provides a penalty not exceeding five pounds for every head of native game taken during the period of prohibition.

Much more might be stated, if necessary, about many other interesting birds, but what little has been feebly mentioned, I trust may commend itself to the Club in the interests of our indigenous "feathered friends."

Tabulated statement showing list of indigenous birds protected under the Victorian Game Act—birds I propose to be proclaimed under that Act—and indicating what birds are protected in the adjacent colonies.

NOTE.—Names marked thus * proposed to be proclaimed. Close Season from 1st August to 20th December.

NAME.	VICTORIA. Close Season.	N.S. WALES Close Season.	STH. AUSTRALIA Close Season.	TASMANIA Close Season.
*All members of the Hawk Family except Wedge-tailed Eagle ...				
*Owls			July 1 - Nov. 30	
*Podargus or Mopokes ...			,, ,,	
*Night-jars		Swift only,		
*Swallows		Sept. 1 - Feb. 28.	,, ,,	
*Bee-eater			,, ,,	
*Great Kingfisher or Laughing Jackass ...		,, ,,	,, ,,	
*All other Kingfishers ..			,, ,,	
Magpie or Crow-shrike ..	Aug. 1 - Dec. 20	,, ,,	,, ,,	The whole year.
*All other Crow-shrikes ...			Except Blk. Mpies July 1 - Nov. 30	
*All members of Grauculus family			,, ,,	
*Thick-heads			,, ,,	
*Thrushes			,, ,,	
*Shrike-tit			,, ,,	
*Fly-catchers and Fantails ...		,, ,,	,, ,,	
*Robins		,, ,,	,, ,,	
Lyre-birds	Aug. 1 - Jan. 31. Proposed Alteration July 1 - Dec. 31.	,, ,,		
*Coach-whip Bird			,, ,,	
*Wedgebill			,, ,,	
*Warblers and Wrens ...		,, ,,	,, ,,	
*Ephthianuras			,, ,,	
*Larks, those known as the Pipit and Cincloramphus ...		,, ,,	,, ,,	
*Finches			,, ,,	

Name.	Victoria Close Season	N.S. Wales Close Season.	Sth. Australia Close Season	Tasmania Close Season
*Bower-birds ...			,, ,,	
*Oriole			,, ,,	
*Wattle-birds or Honey-eater ...		,, ,,		Aug. 1 - May 23
*All other Honey-eaters ...		,, ,,	,, ,,	
*Tree-creepers and Sittellas ...			,, ,,	
*Cuckoos			,, ,,	
*Parrots			Except Rosella July 1 - Nov. 30	
Wild Pigeons and Doves ...	Aug. 1 - Dec. 20	,, ,,	,, ,,	Aug. 1 - Feb. 10
Mallee Hen	,, ,,	,, ,,	,, ,,	
Quail (except Californian) and all birds known as Quail ...	Aug. 1 - Jan. 31 Proposed Alteration Sep. 1 - Feb. 28	,, ,,	,, ,,	Aug. 1 - April 30
Emu	June 14 - Dec. 20	,, ,,	,, ,,	Aug. 1 - Jany. 10
Bustard or Wild Turkey ...	Aug. 1 - Dec. 20	,, ,,	,, ,,	
*Plover or Peewit		,, ,,	Aug. 1 - Nov. 30	,, ,,
*Southern Stone Plover or Curlew		,, ,,	,, ,,	
*All other kinds of Plover ..			July 1 - Nov. 30	
*Stilts			,, ,,	
*Avocet			,, ,,	
*Ibis and Spoonbills			,, ,,	
Crane or Native Companion ...	Aug. 1 - Dec. 20	,, ,,	,, ,,	
*All birds known as Cranes, such as Herons, Egrets, &c. ...			,, ,,	
Bittern	Aug. 1 - Dec. 20		,, ,,	
*Land-rail		,, ,,	,, ,,	
*All other members of Rail family Porphyrio, Coots, &c. ...			Except Porphyrio. July 1 - Nov. 30	
Black Swan	June 14 - Dec. 20	,, ,,	,, ,,	Aug. 1 - Jany. 10
Wild Geese (all kinds) ...	,, ,,	,, ,,	,, ,,	,, ,,
Wild Duck of any species ...	Aug. 1 - Dec. 20	,, ,,	Sept. 1 - Dec. 31	,, ,,

SUCCINCT NOTES ON SOME PLANTS FROM NEW GUINEA.

By Baron Ferd. von Mueller, K.C.M.G., M.D., Ph.D., F.R.S., F.G.S. Etc.

Before resuming the issue of the publication on "Papuan Plants," the writer wishes to offer a few preliminary remarks on various botanic sendings, obtained within the last months from that great Island. Among the plants, thus received, are leafy branchlets and acorns of an Oak, gathered in Gemenoma-valley of Astrolabe-Range (at about 2000 feet elevation) by Mr. E. G. Edelfelt, an emissary of Thomas Gulliver, Esq., F.L.S., of Townsville, who made large monetary sacrifices, to obtain thus some new scientific material from New Guinea. The tree, from which the specimens were taken, was about 80 feet high, with a trunk branchless up to 40 feet and with greyish bark; the leaves resemble much those of *Quercus pallida*, but the scales of the involucre are less prominent and less pointed, and the nuts are not so broad and exceed the involucre considerably in length; the leaves are also very similar to those of *Quercus Korthalsii;* and from A. de Candolle's description (prodr. xvi. part ii, 89) the acorns of that Oak seem also very much like those of the Papuan tree, the seed (to judge from decayed remnants) being likewise much lobed. I regard this Oak referable to *Quercus Dalbertisii*, indicated in the "Victorian" Naturalist," Dec. 1884, and alluded to in the "Papuan Plants" p. 83 (1877.) The proportionate length of the involucre and nut is evidently subject to considerable variation. Flowers were not available or not secured. Acorns of *Q. Dalbertisii* were brought by Mr. Armit also from the vicinity of the Aroa-River of the Kabadi-District.

From the Astrolabe-Mountains were likewise brought by Mr. Edelfelt the acorns of another Oak, differing from those of *Q. Dalbertisii* in larger size, proportionately greater depression and much thicker almost bony pericarp, approaching thus in form the fruit of *Q. pallida*, which however has a more prickly involucre, a larger nut and thin pericarp. The acorns of this second Oak of Astrolabe-Range exhibit much resemblance to those of *Q cornea*; but the involucral scales are less distinct and towards the base of the cup by confluence much obliterated. The species seems well marked, and I have named it *Quercus Gulliveri* in acknowledgment

of the efforts of the Townsville gentleman for New Guinean scientific research. Leaves, flowers and perfect seeds I have not yet seen ; the nut varies from slightly to half exserted.

In the collection formed by Mr. Edelfelt in his late journey from Port Moresbye to the Astrolabe-Ranges occur also as not yet recorded from New Guinea : *Sinapis Timoriana*, *Desmodium pulchellum*, *Dolichondrone Rheedei*, *Ophioglossum pendulum*, *Marattia praxinea*, *Angiopteris evecta*, *Pteris geranifolia*, *Acrostichum repandum* ; also solitary or additional representatives of the genera *Sterculia*, *Breynia*, *Atylosia*, *Grevillea* (named after the collector, but generically as yet doubtful, as only leaves were obtained), *Alyxia*, *Spatoglottis*, *Commelyna*.

During the very recent voyage of H.M. Ship "Dart," when the British protectorate became proclaimed over some additional portions of Eastern New Guinea, Capt. Cyprian Bridge aided by the Rev. James Chalmers gathered at Dixon's Bay of Bessel-Island various plants, from which the occurrence of the genera *Cucumis*, *Bikkia*, and *Imperata* (*I. arundinacea*) in New Guinea is demonstrated. The *Bikkia*, obtained there, belongs to the series of *B. Pancheri*; but it is distinct from that species in broader almost orbicular leaves, shorter calyx-teeth, somewhat smaller corolla with more slender tube and anthers reaching to the summit of the corolla-lobes or beyond them. This highly ornamental species seems altogether new, and is to be recorded as *B. Bridgeana*. A *Bikkia*, collected by Dr. Guppy during the survey-voyage of H.M. Ship "Lark" in 1884 on Shortland-Island and also Treasury-Harbour of the Solomon-Group, approaches as regards leaves and flowers closely to *B. Pancheri*, but I have seen no fruit. Among Capt. Bridge's plants from the Cloudy Mountains are as unrecorded for New Guinea a *Hypolythrum* and a *Spiridens*. The Rev. W. G. Lawes brought recently among other plants from the vicinity of Port Moresbye : *Vittadinia brachycomoides*, *Setaria glauca*, a *Graptophyllum*, a *Buechnera* and a *Dianella*, thus adding as many genera to the records of the Papuan Flora.

The distinguished naturalist Mikluko-Maclay secured on the north coast of New Guinea among plants with edible fruit : *Pangium edule*, *Bassia Maclayana* and a *Canarium*, the latter perhaps distinct from those recorded before as Papuan.

Mr. Will. E. Armit, as emissary of the "Argus" for itinerations in New Guinea, gathered on the S.E. coast, particularly at the Aroa-River, *Gyrocarpus Americanus*, *Physalis minima*, *Buddleia Asiatica*, *Fuirena umbellata*, *Paspalum minutiflorum*, *Pennisetum macrostachyum*, *Polypodium Dipteris*, also single species of *Spondias*, *Alysicarpus*, *Uraria*, *Smilax*, *Scirpodendron* and a second *Triumfetta*.

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FUNGI OF COUNTRY EAST OF MT. BAW-BAW.

By Henry Thos. Tisdall, F.L.S., Walhalla.

In the President's address to the Field Naturalist's Club in 1883, he expressed a hope that some one would undertake to delineate the Victorian Fungi. In forwarding a first instalment of specimens of those fungi, which are found in the neighbourhood of Walhalla and the vicinity of the River Thompson, I am only endeavouring to fill a want so publicly expressed.

Fungi may be divided into two great classes, namely the *Sporifera*, in which the spores are exposed, and the *Sporidifera*, which have the spores, or more correctly, the sporidia, enclosed in cells called asci.

In this paper I shall only deal with one tribe of the *Sporifera*, the noble genus *Agaricus*.

Dr. Badham, in his famous work on the edible fungi of Britain, mentions upwards of 20 different species belonging to this tribe that are fit for food, and Professor Berkeley says that at least one-tenth of the *Agarics* are esculent, in other words, two hundred species may be eaten.

The great distinguishing feature of the *Agaric* is the way in which the hymenium is spread over gill plates which line the under side of the pileus. Before I proceed, I might explain that the hymenium is composed of a thin membrane completely dotted over with quaternary groups of spores; each spore is borne on the end of a slender stalk or sterigma, and four of these sterigmata spring from a thicker body called a basidium, which is in its turn fastened to the hymenium.

Professor Berkeley defines the *Agaracini* thus, "Hymenium plicate; radiating from a common centre: the main divisions often connected by transverse processes, but not so as to form definite pores."

The common edible mushroom, *Agaricus Campestris*, may be taken as a fair type of the whole class.

Unfortunately, I did not magnify the spores so as to determine their color, before submitting them to Professor Cook, of London, (to whom they were forwarded by Baron von Mueller), consequently he was unable to place a few of the species accurately.

Agaricus (*Mycena*) *galericulatus*. *Frees.*

This pretty little plant I have only found in the dampest fern tree gulleys, on decayed logs. It grows in clumps or tufts numbering from five to ten: the pileus is cone-shaped, brown and shiny. The lamellæ grow from the margin, and are not fastened to the stem. The stipe itself is hollow. Common in the month of June.

Agaricus (*Lepiola*) *Clypeolarius*. *Frees.*

Found generally in well-wooded districts, quite solitary, so fond is it of light and air that I have discovered specimens with a stem

of ten inches in length, trying to out-top the grass among which it always grows. It is easily distinguished by the peculiar shape of the pileus, hemispherical, with a knobby rise over the stem and the edge turning inwards. The cap is curiously marked by ringed patches of brown; the gills do not adhere to the stipe; stem hollow. This *Agaric* does not usually extend to the mountains, although I have discovered it at the source of Ostler's Creek, which is 1000 feet above sea level.

Agaricus (*Mycena*) *polygramnus. Frees.*

Rather uncommon in this district. In fact, I only found them near Toongabbie. They generally grow in the interstice between the old bark and the decayed log. The root-like concealed stem is very long, and covered with mycelium; pileus cone-shaped and very pointed, shiny and dark-brown near the apex; gills fastened to stipe, stem with a small hollow. Flourishes during May and June.

Agaricus (*Leptoma*).

These are exceedingly beautiful little fungi, but Professor Cook requires the color of the spores for exact determination of the species. They grow on decayed logs in the darkest nooks of the gulleys. The pileus is of a dark blue at the centre, gradually paling to French grey towards the edge; the lamellæ grow from the edge and are not fastened to the stem; the stipe is hollow, and becomes bluish towards the root.

Agaricus (*Pholista*) *radicosus.*

Found on a spur of the mountain running into Deep Creek, at the foot of an Acacia. Pileus sub-globose, but depressed towards the centre, the edge fastened by a thick velum to the stipe; the color of the cap was a pale yellowish brown; the marking on the top peculiar and constant; stem very little smaller than the cap; lamellæ growing from the edge.

Agaricus (*Armillaria*).

Here again, the color of the spores is required for exact determination; however, if they prove to be white it is pretty certain to be a new species, so that I shall examine them carefully in April, when they can be obtained. The pileus of a yellowish brown color, is rather flat, but rises in a cone over the junction of the stipe; the annulus or ring is very distinct; stem solid, with gills annexed thereto. This fungus may be found growing on the under-part of decayed logs in very damp situations.

Agaricus (*Marasmius.*)

Found on decayed vegetation in the dark musk-covered gulleys of our district. They grow in clumps containing ten to twenty separate plants; stipe hollow; lamellæ of different lengths; pileus brown, shiny, even at the edge, depressed towards the centre.

Agaricus (*Panus.*)

This fungus has the pileus formed of a leathery substance, unless when very young. It abounds on the sides of hills facing southward, growing on the shingly soil under logs. The stipe simply spreads out at the top so as to form a pileus; when large, the cap splits, giving it the appearance of a digitate leaf. The lamellæ are of different lengths, placed underneath the side, which droops over; stipe solid, becoming very thick at the base.

Agaricus (*Collybia*) *xanthopus. Frees.*

I have only found these *Agarics* in Stony Creek, a very deep, dark gulley east of Baw-Baw. The hollow stipe is very thick at base, but slender towards the middle and top. They can be found in April, nestling in the grass amongst fallen leaves and decayed vegetation. The pileus is rounded, except towards the centre, where it is slightly depressed; edge even; gills of various lengths; the color of the hymenium is pure white.

Russula (*citrina.*)

The family of *Russulæ* are, generally speaking, good for food, but Professor Cook is of opinion that the flesh of the *citrina* would probably taste acrid. These fungi abound in Stony Creek among the grass; stipe solid, and its substance is continued into the pileus; the cap is semi-globular, deeply depressed towards the centre; gills pectinate, very probably this is the reason that the Professor pronounces it semi-poisonous.

Agaricus (*Schizophyllum*) *commune. Frees.*

Professor Berkely gives the following description of the peculiar structure of the *Schizophyllum.* "The gills split in the direction of their trama, at the same time rolling over on either side, so as to present a very curious aspect. A few of the lower species are strictly resupinate, with scarcely any definite arrangement of the lamellar processes." I found the *Sch. commune* growing on logs in a tributary of the River Latrobe. The fungi were rather dried up, but not so much as to be useless. About a month ago I found a splendid specimen quite fresh. The short stem opens out into a nearly circular pileus; the testa was of a beautiful light-brown color, with slight grooves running from the edge to the excentric point; the lamellæ on the other side ran in the same way, and were of a delicate flesh color.

Agaricus lampas.

I found this species for the first time last March. The fungi were growing near old eucalypt stumps about 100 feet above Stringer's Creek, sometimes in clumps, but often single. Pileus covered with a fine dark grey down singularly like a mouse's back, the centre depressed over the head of the stipe; pileus curled over the edge; hymenium very white, spread over strong lamellæ, which wore much separated; the gills ran from the edge well down the stipe, nearly

to the root, towards the outer edge more (3-5) lamellæ were formed between the entire ones; stipe solid, and of a rather close texture. This *Agaric* was so phosphorescent that in a dark room it gave sufficient light to read by. The whole mushroom seemed to be equally luminous except the upper testa of the pileus; the gills of the hymenium were rather brighter than the rest. The light was of that peculiar white appearance seen in the electric lamp, only, of course, very faint; on bringing the fungus towards a room brilliantly lighted, it gradually paled, and when in the room only presented the appearance of an ordinary white mushroom.

In concluding this paper, I would like to give the following directions taken from Dr. Badham's work, as to how to choose edible mushrooms.

1st—No pleasant smelling fungus is poisonous.

2nd—Some that have no smell are poisonous.

3rd—Avoid those that are bitter or parch the throat. Those that yield spiced milk or are of a livid flesh color. Those that assume hues on being broken. Those that are pectinate, that is, have equal gills like a comb.

4th—Do not eat after a slug.

5th—Avoid *all* mushrooms that are past their prime.

THE PHANEROGAMOUS PLANTS OF STUDLEY PARK, KEW, NEAR MELBOURNE.

By F. Reader.

Read before the Field Naturalists' Club of Victoria, Jan. 12, 1885.

(Part I.)

Of all the so-called parks situated in and near Melbourne, none claim that somewhat misused appellation in a wider sense than Studley Park. It is almost entirely surrounded by the curiously winding river Yarra, whose banks and rocky slopes are verdant with luxurious growth of manifold herbs and grasses. Umbrageous wattles with golden blossoms diffuse in spring a delicious aroma. Stately eucalypti, she-oaks, native cherry and blue-berry trees predominate; in short, Studley Park presents all those attractions so freely supplied by nature in this vast dominion of the globe. Hence the park is the resort of many pedestrians who gladly avail themselves of the so easily attainable retirement from the city's overheated dwellings, to cast off every day's care and drudgery, and enjoy nature's beauteous treasures.

Studley Park affords the botanist many points of interest by the manifold and varied forms of species. Save marine algæ, species of

every order of the vegetal kingdom are represented, from the lofty eucalyptus down to the microscopic unicellular algæ. Here everlasting lichens interspersed with hygroscopic mosses cover the boulders, woudrous liverworts hide the clayey banks. Fungi, fleshy, woody, gelatinous, are in season remarkably abundant. The much prized mushrooms love to dwell here; sweet scented agarics equally abound; in short a place that should delight the heart of a specialist. Certainly no fungologist should fail to visit the park.

Anyone wishing to procure a good sized herbarium of Phanerogamous plants within a short period and almost within the city, I should urge to explore the park.

The total number of plants collected in that locality is 271, comprising 58 natural orders. Of these the order *Compositæ* carry off the palm with 38 species, *Gramineæ* standing second with 32, etc. Reference to the "Census" evinces that 204 species only of the above are indigenous, the remainder having been introduced through various channels from different countries. The greater number of these aliens have thoroughly established themselves, and in some instances the hardier kinds have replaced the weaker native species.

Here I wish it to be understood that the list can have no claim to completeness, as some species I have probably overlooked, and additional plants might at any time escape from the adjacent fields and gardens; these localities offering a fruitful source of swelling the already large number of naturalized plants.

On comparing the flowering time of the plants in Studley Park, with those in different localities around Melbourne, we note that the former produces flowers in average somewhat later in the season. For example: *Drosera menziesii* and *D. auriculata* showed blossoms early in July in the vicinity, whereas in the park I observed flowering specimens, first in August, although stems and leaves could be noticed in July.

Through climatic influences the flowering time is subject to variation; hence a deviation in the production of flowers may be observed on the plants growing in Studley Park. For example, *Acacia dealbata* blossomed last year in August; this season I noticed numerous trees bearing blossoms freely in July. On the whole, however, the deviation is but slight, and a pretty precise calendar answering for each succeeding year may be established.

As Tasmania has numerous plants in common with Australia, and to New Zealand also several species extend, I have indicated the simultaneous occurrence of these plants. Some species were introduced from Great Britain, others from South Europe, some again from the Cape of Good Hope ; various cultivated trees from America, &c. To determine the names of these, the flora of each of the countries would be requisite. Not possessing the necessary literature embracing the whole subject, nor even having the "Flora Australiensis"

on hand, I was compelled to seek assistance in the determination of some of the species. Therefore I am under obligation to that eminent botanist, Baron von Mueller, for the readiness he evinced to aid me in this dilemma. I am also indebted to Mr. Guilfoyle, Director of the Botanic Gardens, chiefly for the identification of some cultivated species, and to Mr. D. Sullivan, F.L.S.

Valuable information I gained from some British and Continental books, as well as from the Flora of Tasmania and New Zealand. Portions relating to the medical and other uses were borrowed from Fluckiger and Hanbury's "Pharmacographia," Lindley's "Medical Botany," and other good authors, as also from several writings of that excellent botanist, Baron von Mueller. The authorities appended to the orders, genera and species, I quoted from Stendet's "Nomenclator Botanicus," and the systematic "Census of Australian Plants"

In conclusion, I may add, that as the attention of the proper authorities has now been directed to the wanton destruction of the trees and shrubs of Studley Park, it may be sincerely trusted that ample and permanent protective measures will be accorded that beautiful and picturesque spot of our large and magnificent city.

Dicotyledoneæ, Ray.

Choripetaleæ Hypogynæ, F. v. M.

Order, Ranunculaceæ, A. L. de Juss.

Properties.—Generally acrid bitter, narcotic plants. Some, however, are slightly bitter and tonics. The juice of many species of Ranunculus acts as a rubefacient.

Ranunculus, Tournefort. Etym. From rana, a frog; these plants delighting to grow in situations where frogs abound. Vernac, name: Buttercup, Crowfoot.

R. lappaceus, S.M. Native Buttercup. Flowers August, November, Distributed New Zealand and Tasmania.

R. muricatus, L. Prickly-seeded Buttercup. Flowers September, April. Introduced from South Europe.

Clematis, Ruppius. Etym. From the Greek, κλημα, (clema), the shoot of a vine, alluding to the twisting branches. Ver., name, Traveller's Joy, Virgin's Bower, Old Man's Beard.

C. microphylla, D.C. Native Virgin's Bower. Flowers July, October. Festooning the shrubs and trees, and affording a beautiful sight in fruiting time by the mass of the white, star-like and feathery fruit-styles. Distributed Tasmania.

Order, Dilleniaceæ, Salisbury.

Properties unimportant.

Hibbertia, Andrews. Etym. In honor of George Hibbert, of the Botanic Gardens of Clapham.

H. stricta. R. Br. Flowers August, December. Distributed Tasmania.

Order, Cruciferæ, A. L. de Juss.

Properties.—Notably stimulating and antiscorbutic.

Sisymbrium. Tournef. Etym. Name given by the ancients to the watermint or watercress. Vern. name, Hedge Mustard.

S. officinale, Scop. Common Hedge Mustard. Flowers September, March. Naturalized. Distributed. Introduced in the United States, occurs in Europe, West Asia to the Himalaya, and North Africa.

Uses.—The herb and the seed were formerly much used as a discutient, diuretic and laxative remedy for hoarseness, in the form of a syrup; public speakers and singers especially procured the drug from France, under the name of "Herbe aux chantres."

Lepidium, Tournef. Etym. From the Greek λεπις, (lepis), a scale, alluding to the pouch-like form of the fruit. Ver. name, Pepperwort.

L. ruderale, L. Common Pepperwort. Flowers October, April, Distributed, temperate parts of Europe, Asia, Africa, introduced in America and New Zealand.

Capsella, Medikus. Etym. A diminutive of a Greek and Latin word, applied to the form of the fruit, a little capsule or box.

C. Bursa Pastoris, D.C. Shepherd's Purse. Flowers nearly all the year round. An alien. The petals of this plant tend to be transformed into stamens. Distributed temperate and Arctic Europe, North Africa, and Asia to the Himalaya, introduced in all temperate climates.

Uses.—Formerly in repute in Diarrhœa and Dysentery. It may be applied to cuts, and made into a poultice will be found serviceable in erysipelas. It is much liked by small birds.

Nasturtium, R. Br. Etym. From nasus tortus, a convulsed nose; the acrid and pungent qualities were supposed to produce distortion of the face. V. N. Cress.

N. terrestre, R. Br. Synonymous *N. Palustre, D.C.* Marsh-Cress. Flowers December, June. Distributed many countries in the temperate and cold zones.

Senebiera, D.C. Etym. In memory of I. Senebier, a Genevese physiologist. V. N. Wart Cress.

S. Didyma, Pers. Synonymous *Coronopus Didyma, S.M. Senebiera pinnatifida, D.C.* Lesser Wart Cress. Flowers Sept., April. An Alien. Distributed. Introduced in many countries. Considered to be a native of temperate South America.

Order. Violaceæ, D.C.

Properties.—Emetic and laxative. *Viola canina* and some others have the power of removing cutaneous diseases, and have been employed as cosmetics.

Hymenanthera, R. Br. Etym. Alluding to the membranous appendage of the anthers. V. N. Scrub-Boxwood.

H. Banksii, F. v. M. Synonymous *H. dentata, R. Br.* Flowers July, Sept. Distributed Tasmania, and in varieties in N.Z.

Uses.—Adapted for close hedges, but of slow growth. Stands clipping well. Flowers sweet-scented.

Viola, Tournef. Etym. The old Latin name. V. N. Violet.

V. hederacea, Lab. Synonymous *Erpetion hederaceum, Spach.* White Violet. Flowers March, June. Distributed Tasmania.

Order. Pittosporeæ, R. Br.

Properties.—Some species are resinous. *Bursaria spinosa* yields a valuable wood.

Bursaria, Cavanilles. Etym. Referring to the pouch or purse-like form of the fruit. V. N. Native Box or Boxtree.

B. spinosa, Cav. Synonymous *Cyrilla spinosa, Spr., Itea spinosa, Andr.* Prickly Boxtree. Flowers Jan., April. Distributed Tasmania.

Uses.—The wood is exceedingly hard and fine-grained, adapted for turnery, and many implements. Said to be acrid and poisonous. Yields a deep red purple dye. Remarkable for their insectivorous propensities, *vide* Darwin, on "Insectivorous Plants."

Order. Droseraceæ, Salisbury.

Drosera L. Etym. From the Greek δροσερός, (droseros), alluding to the glands exuding a pellucid fluid, which makes it appear to be covered with dew. In Latin, *Ros Solis*, the same as the English Sun-dew. V. N. Sun-dew.

D. auriculata, Backhouse. Flowers Aug., October. Distributed Tasmania and New Zealand.

D. Menziesii, R. Br. Flowers Aug., October. Distributed Tasmania and New Zealand.

D. Whitakkeri, Planchon. Flowers July, Sept.

NOTES ON THE PROCELLARINÆ OR PETREL FAMILY.

By T. A. Forbes-Leith.

Read before the Field Naturalists' Club of Victoria, March 9, 1885

These singular and interesting sea birds constitute a sub-family, along with the Puffins and Prions, of the *Procellaridæ* family; the other sub-family of which contains the Albatrosses.

Petrels in their ever restless habits almost remind one of the poet's lines on the brook—

Man may come, and man may go,
But I go on for ever.

For from early dawn to long after sunset, we see them ever on the wing, and the more the ocean is lashed into storm, and while the hurricane or tornado are sweeping the sea in all their awful grandeur, and making the bravest sons of ocean cling to the rigging and hold their breath, the stormy petrel is all in its glory, and skips from crest to crest of the seething and hissing waters, apparently with all the buoyant joy of the spring butterfly, who on its sunny path sips nectar from the flora of creation. The ocean is the native home of these birds, and they are met with in all latitudes, from the burning sun of the tropics to the ice-bound shores of the Arctic and Antarctic circles, and far away from any land; they fly with swiftness and power, keeping it up night and day for long periods. At times they will run on the top of the water with their wings extended, and from this habit they get their name of Petrel from early navigators, who compared them to St. Peter, Peterill, being, or meaning, a diminutive Peter.

The beak of these birds is about the length of the head, consisting of several pieces, and is hooked at the tip; the nostrils are either tubular, on the side or at the base of the bill; the hind toe consists of an elevated claw, and the tarsus is usually short.

Their food consists mostly of molluscous and crustacean animals, and sometimes they feed on the dead bodies of cetaceans, but do not often eat fish. They have a great partiality for fat, and oil they have been seen to scoop from the sea with their beaks, after it has been thrown from a ship.

The most interesting, because the best known, is the Stormy Petrel, or Mother Carey's chicken, *Procellaria pelagica*.

This bird was once the terror of sailors, who considered it the omen of an approaching storm, and in those days they had much the same feelings about a parson, and did not like him as a passenger, believing he brought bad luck; but now-a-days these superstitions, as well as sailing on a Friday, have, I may say, quite died out; but "Jack" still believes in a mermaid, and will get very angry if you doubt his having seen one.

In northern latitudes Stormy Petrels make for the coast of Nova Scotia at the breeding season, where there are many low-lying islands of a sandy nature on the surface, and deeper down mud is met with. Here thousands of Petrels congregate and set to work making little burrows of nearly a foot deep. They lay one white egg about the size of a pigeon's, and when the young appear they are like small white puffs, the down on them being so fine. The parent birds go to sea mostly through the day, returning at night to feed their young, which they do with secreted fluid food from their digestive organs, and during the whole night while the feeding goes on they make a great croaking noise like a large army of discontented frogs.

The Stormy Petrel is a bird of such an oily nature, that in some places fishermen used to make lamps of their bodies, by simply drawing a wick through them. So great was the superstition of sailors at one time concerning this Petrel, that they thought it was possessed of some magic influence derived from Mother Carey, and that it could produce a storm at will ; they also believed it never visited the land, but carried its egg under its wing, and there hatched it while flying over the storm-tossed ocean ; so this pretty little sea bird was hated as well as feared.

There are other places in the north, where a few Petrels annually breed, as the Shetland Isles, that great rock known as Ailsa Craig, in the Firth of Clyde, on the island of St. Kilda, one of the most westerly of the Hebrides Islands, in the north of Scotland, and on some few other barren islands of northern Europe and North America. *Procellaria Wilsonii* is a North American species, somewhat resembling the Stormy Petrel, and named after the famous American ornithologist.

The next best known bird of this family is the Cape Petrel, or Cape Pigeon of Sailors, *Procellaria* (or *Daption*) *capensis*. Although met with in great numbers in many parts of the Southern Seas, it was first seen by early navigators in considerable numbers off the Cape of Good Hope, and being the size of a good large pigeon, got the name of Cape Pigeon, as it somewhat resembled one in the air in form, and in its colours of white and brown. Before a coming storm these birds get very tame, hovering close over the stern of a ship, and on one occasion I attached a small fish-hook to the end of an English four-in-hand whip, and caught a specimen by causing the end of the thong to curl round its neck. I have also caught them with a baited hook, and even with strong threads towing astern.

Returning again to the coast of Great Britain, we find four of the family pretty common at times in the northern parts, as the Stormy, Wilson's, The Capped and the Fulmar, and two occasionally, as Bulwer's and Leach's, and some of these are found on the coast of North America. The Cape Petrel has been seen on the coast of Europe, and a Mother Carey's chicken many years ago went up the Thames. On the coast of India the two most common are the Ganges Stormy Petrel and the little Diving Petrel.

The largest of the family is the Giant Petrel, *Procellaria gigantea*, whose habitat is the vast Southern Ocean. The early Spanish navigators knew this bird and called it "Quebrantahuesos," or break-bones, from its savage and rapacious habits. In general appearance it is about the size and much resembles the sooty Albatross. The great head quarters of the Giant Petrel used to be the Malounie, now called the Falkland Isles, where they go periodically to breed on the sandy shores there ; and having hatched their young, again

go forth on their wandering existence across the desert ocean. These Petrels are met with all along the southern coast of Australia, in Bass's Straits, and even in Hobson's Bay ; and altogether on the coast of Australia some twenty-four species of Petrels are found, the most interesting of which is perhaps the short-tailed Petrel or Mutton-bird, *Nectris* (or *Puffinus*) *brevicaudus*. These birds come in vast numbers in the month of November to Phillip Island, Western Port Bay, to breed, but in the earlier years of this colony they were much more numerous, and numbers of colonists used to congregate there at the egg season and forward large quantities of their eggs to the Melbourne market, where they were sold and eaten for ducks' eggs, which they much resemble in size and shape; and I have been informed by an eye witness that many ludicrous scenes were witnessed some twenty years ago in the scrambles of the people there, to be first to get the eggs, and many a good tumble they got. When rushing for one egg hole they put their foot in another, and turning a complete "somerset" looked very foolish, especially as the second man ran past and got the egg.

In the month of December two years ago, I was going down to Dromana in a steamboat, and on that occasion Hobson's Bay was perfectly alive with Short-tailed Petrels, all steering slowly down towards the "Heads," and one of the men belonging to the steamboat told me that the steamer left Queenscliff at 5 a.m. that morning, and that the "Mutton Birds" were then just coming through the heads "*en masse*," and now they were returning in "open order," but I suppose before they reached the "rip" or Head's Passage, they would form "close column."

The fat of these birds has been found to be a splendid preservative for leather, and is much used when obtainable by saddlers and owners of harness for that purpose, and to make it pliable, and soft; and I suppose therefore that it contains somewhat of the properties of fish oil and mutton fat, the combination of which is so much used for leather.

Barren Island, in Bass's Straits, is another great rendezvous of the short-tailed Petrels in the spring, and a neighbour of mine who traded there regularly with his own vessel, used to bring up their eggs, and make presents of them as ducks' eggs. He told me the island was inhabited mostly by half-castes, and at the Petrel egg season infested by snakes; also that it was no uncommon thing for persons after eggs to pull out their hand with a snake sticking to it; but he never heard of any harm from the bites, as the snakes were so surfeited with young petrel, &c., that they were harmless.

We are informed by those who have visited Chicken Islands off the coast of New Zealand, that a curious lizard known by the name of *Tuatara*, and certain species of Petrels, were found living in harmony in the same burrows, which burrows were almost always

made by the lizard, and were two or three feet long leading into a chamber one foot and a-half long and half a foot high; here each builds its nest; the lizard almost always taking the right side of this little chamber and the Petrel the left; and the lizard sits with its head close to the entrance to show fight to any enemy that puts in an appearance, and if a hand or stick is put near the entrance the lizard will "go for it" with all the savage pluck of a fighting bull terrier, and defends himself and his little feathered friend to the last. The tuatara lizard feeds partly on worms and beetles and partly on the remnants of fishes and crustaceans brought home by the Petrel, and thus both animals are benefitted by this curious partnership, and I doubt not that during the time it lasts, they are able to understand each other's language, whether it is carried on as in the case of Coleopterous and Hymenopterous insects by means of touch, (through the antennæ), or by sounds issuing from the bronchial tubes or thorax.

As might be supposed, there are not half the number of Petrels met with on the New Zealand coast, as are met with on the coasts of the Australian continent, but the Stormy, the Cape, the Short-tailed and the Diving are common on both, while on the coast of Tasmania a very large proportion of those found on the Australian coast are met with.

There is a great deal yet to be learnt about this interesting family of birds, but as so many of them keep far from the main continents of land, and only visit islands rarely touched at by man, choosing the most desolate, barren and solitary of them for their breeding grounds, the time may yet be far distant before we become acquainted with the habits of some of those that frequent the great Antarctic circle. I remember well that some thirty-two years ago I was as far south off Cape Horn as 65° and amongst the ice, and at that time shot some Snow-white Petrels that I have never seen since, either in the British or other Museums, nor in private collections; and I also remember that these birds had the most beautiful pink coral red eyes, and were about the size of a turtle dove; and the captain of the vessel who had sailed much in "high latitudes" said he had never seen them before.

Having I fear made this paper already too long, I will now conclude it with half a dozen lines by the poet Montgomery, which I think refer to many species of Petrel, as much as to any members of the great and interesting feathered tribe.

> Birds the free tenants of earth, air, and ocean,
> Their forms all symmetry, their motions grace;
> In plumage delicate and beautiful,
> Thick without burden, close as fishes scales,
> Or loose as full blown poppies on the gale;
> With wings that seem as they'd a soul within them,
> They bear their owners with such sweet enchantment.

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THE

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The Author of each article is responsible for the facts and opinions he records.

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FIELD NATURALISTS' CLUB OF VICTORIA.

The monthly meeting of the Club was held at the Royal Society's Hall, on Monday evening, 9th March, 1885.

The president, Rev. J. J. Halley, occupied the chair, and about sixty members and visitors were present.

The hon. librarian acknowledged the receipt of the "Catalogue of the Australian Hydroid Zoophytes," by Mr. W. M. Bale, from the author; "Proceedings of Linnæan Society of New South Wales;" "Meteorology of Australian Alps," J. Stirling; "Science Record, No. 2;" also a collection of plants made by the late J. F. Bailey, presented by Mrs. Bailey.

The hon. secretary reported that since last meeting a deputation from the Club had waited upon the Trustees of the National Museum with reference to affording greater facilities to students and visitors at that institution, and that the deputation had been favorably received, and a promise made that the Director should report on the alterations suggested, when the Trustees would see what could be done to meet the wishes of the Field Naturalists' Club.

Misses E. Mackenzie, E. C. Simson, M. J. Simson, M. Simson, Mrs. C. H. Nicolson, Messrs. A. R. Blackwood, Gowen Evans, S. Miller, C. Ryan, T. G. Campbell, and Master R. D. Hatch were elected members of the Club, whilst three ladies and six gentlemen were nominated for membership.

Mr. A. J. Campbell moved "That a deputation wait upon the Commissioner of Trade and Customs to request him to include certain birds in the Game Act." Mr. Gregory moved as an amendment "That Mr. Campbell's list be referred to a sub-committee for report." The amendment was carried.

Mr. A. H. S. Lucas drew attention to the Botanical and Biological Classes now forming at Ormond College.

Papers read.—1. Mr. T. A. Forbes-Leith read a paper "Notes on the Petrel Family," in which he gave many interesting notes about the Stormy Petrel, Cape Pigeon, and Mutton Bird, or short-tailed Petrel. He also exhibited specimens of each bird, and remarked that about twenty-four species of petrels are to be found on the Australian coasts. 2. The Rev. A. W. Cresswell, M.A., read a paper, "Notes of a Trip to Griffith's Point." He described with the help of diagrams and specimens the geological features of the country between Griffith's Point and Kilcunda, and also a visit to the coal mine at the latter place, concluding with some account of his results in shore collecting and dredging at Griffith's Point and Phillip Island, which were highly recommended as localities for specimens of marine zoology. 3. Mr. A. H. S. Lucas read a paper on "Darwin on Australia," being a critical examination of the chapter on Australia, in Darwin's "Voyage of a Naturalist." The writer argued that

Darwin's rather hasty conclusions on the fauna and flora of Australia had done much to limit and discourage biological research in these colonies. 4. Mr. C. French read some extracts from a review in the "Gardeners' Chronicle" of January 24th, of Miller's "Dictionary of English Names of Plants." He called the attention of members to the importance of discouraging the use of local and bush names (often absurd and generally misleading), for Australian plants. He drew attention to this review as clearly and vigorously stating the chief "objections to the use of popular names for other than popular purposes."

The following were the principal exhibits of the evening:—By Mr. E. Bage, fungi, parasitic on larva of New Zealand Swift Moth, (*Hepialus virescens*,) also Kauri gum ornaments from New Zealand; by Mr. A. J. Campbell, fossil fruit found ninety feet below the surface at Ballarat, also egg of Reef Heron (*Demiegretta sacra*,) taken from a rocky islet off Tasmania, being the first recorded instance of this bird being attached to the avi-flora of Tasmania; by Mr. E. M. Cornwall, two rare longicorn beetles, (*Tryphocaria sp.*); by Rev A. W. Cresswell, geological specimens from Kilcunda, and marine specimens from Griffith's Point, Western Port; by Mr. J. E. Dixon, fossil crabs and barnacles from dredgings of River Yarra; by Mr. C. French, two war-drums from New Guinea, and rare butterfly, (*Ogyris genoveva*), from North Queensland; by Master C. French, orchid, (*Prasophyllum Archeri*), grown by exhibitor; by Mr. R. Hall, whip snake from India, and water snake, from Fiji; by Master Hill, recent entomological captures; by Mr. T. A. Forbes-Leith, pair of red-capped robins with nest and eggs, Stormy Petrel (*Procellaria pelagica*), Cape Pigeon (*Daption Capensis*), Short-tailed Petrel (*Puffinus brevicaudus*), and Fairy Prion (*Prion Ariel*); by Mr. D. Le Souëf, black cobra, scorpion, and centipede from Malay States, pearl shells from Thursday Island and West Australia; by Mr. H. Kennon, Marine Algæ from Flinders, Western Port Bay, also English fossils; by Mr. W. H. Passmore, minerals from South Australia: by Mr. F. Reader, Plants from Studley Park (*Candolleaceæ-Plantaginæ*), also different stages of growth of fungus (*Polyporus-Mesopus-rudis, Berk*): by Mr. F. Spry, case of Victorian lepidoptera.

After the usual *conversazione* the meeting terminated.

NOTES OF A VISIT TO GRIFFITH'S POINT.

By Rev. A. W. Cresswell, M.A.

It is not worth while taking up your time by describing the journey thither, although as it involves railway, coach and steamer travelling

it is not as a rule free from incident, but in order to plunge *in medias res* at once, we will imagine ourselves there, and after a good night's rest at the hotel, just starting on our first tour the following morning. We (I say we, for there was another naturalist with me) were bound for Kilcunda and its coal mines. Although, as far as friendship goes, my fellow tourist and I were the best of chums, yet from a natural history point of view, we were more matched than mated, for my friend's speciality, to the exclusion of almost everything else besides, was entomology, whilst my partiality was for rocks, fossils, marine objects and almost anything as long as it wasn't insects (and let me add in a parenthesis, and saving the presence of the Field Naturalists' Club, birds' eggs and orchids.) The distance to Kilcunda is about seven miles through the bush, and somewhat longer following the coast line, and here our different tastes caused a slight divergence of mind to begin with ; my friend, having regard to insect hunting, preferring the bush route, whilst I, wishing to see the rock sections exposed on the cliffs, and to gather shells, &c., wanted to go the beach road. However we didn't quarrel or separate, but agreed to split the difference, and to walk the first half of the way through the bush, where my friend could catch spiders, beetles, and butterflies to his heart's content, and then to strike for the sea-coast where I could have my fling for the rest of the way.

Geologically speaking, the whole country along the coast here and far away into Gippsland consists of Mesozoic rocks, for the most part sandstones, conglomerates and breccias of a greenish or olive grey hue, like the corresponding formations of the Otway district, with here and there thin coal seams varying in thickness from a sheet of paper to two or more feet, and in some instances isolated branches or trunks of trees lying embedded in the rocks by themselves and more or less converted into coal, and we frequently observed veins and coatings of calcareous spar. I may mention that these rocks being coal-bearing are called "Carbonaceous," to distinguish them from the true Carboniferous rocks of England and other countries, and which are far lower down in the geological series, being a sub-division of the Palæozoic, whilst our coal-bearing rocks are, as mentioned before Mesozoic, about the same horizon as the Oolite strata, so at least it is believed.

The whole facies of these rocks at once strike the observer as being very different to the Silurian schistose and sandstone rocks upon which Melbourne is built, and sections of which we pass through every day in the railway trains exposed in the cuttings, the prevailing colour of these latter being shades of brown and yellow, whereas the usual colour of the Mesozoic rocks in Victoria is greenish grey, add to which they are much more siliceous and harder.

After a journey of about fifteen miles, as I think we made it by following almost every turn and bend in the coast line, we arrived at the

small village of Kilcunda, the site of the coal mine, and after refreshment paid a visit to the mine. It lies in a hollow below the village, corresponding to a kind of saddle in the cliff on the coast. The outside of it had the appearance of an ordinary shaft on the gold diggings, with its gaunt poppet head towering aloft, and the engine-house close by for winding and pumping, only in the place of a long yellow hill of mullock and tailings, there were several high mounds of coal, black and glistening, at the pit's mouth, amounting to several thousands of tons, awaiting the means of transit to Melbourne. We went down the shaft which was 100 feet deep, and saw all there was to be seen of the seam of coal, which is two feet thick and considerably faulted, and sloping with the other strata north by east at an angle of about 10°. As fast as the coal is taken out, the gap is filled in the usual way with stones to prevent settlement or creeping.

The only point of interest that I think it worth while to draw your attention to in connection with this mine is that, contrary to what I was prepared to expect, the coal seam at Kilcunda had a very distinct underclay of the same thickness as the coal itself, viz., two feet, a small heap of which on the outside of the shaft was one of the first things that drew my attention, and was described to me by the manager as being equal to the best Stourbridge fire-clay of England. Now, Mr. Selwyn in his notes on the Geology of Victoria, published in the Exhibition Catalogue of 1861, p. 19, speaks as follows, in allusion to the patchiness of the Cape Paterson coal seams :—"This is apparently due to the drifted origin of the greater part, if not all, the vegetable matter now forming the coal. No 'underclay' is seen, and sandstone or a sandy bed commonly forms both the floor and roof of the seams." You will see from the circumstance of there being no "underclay," Mr. Selwyn draws the inference that the coal of the whole district must have been of drift-wood origin, and certainly the thin seams that we saw cropping out at intervals along the coast beforehand having no underclay, were perhaps of that description, suggesting however to my mind the idea of segregation. But whatever may be the character of these or other seams at Cape Paterson to which alone Mr. Selwyn alludes in 1861, the Kilcunda seam, since discovered, has as distinct and as unmistakable a stratum of underclay as any English coal field. Now the underclay being generally supposed to be the relic of the original soil on which the coal plants grew, it follows that either the coal vegetation at Kilcunda grew on the spot where the coal is now found, or else that if drifted it must have been by some violent inundation which stripped the vegetation off the country where it was growing—subsoil and all—like some of those floating islands we read of in American rivers. After coming up the shaft, we walked to the beach opposite where the coal stratum was cropping out, and again saw the

underclay and the shaly roof above. In this shaly roof we found some fair specimens of *Zamia* (*Z. Barklyi*) and one containing a nut or fruit of the *Zamia* which I gave to Professor M'Coy, but we found no examples of *Tæniopteris* or other genus, though they occur in plenty at Cape Paterson.

I should have mentioned that my entomological friend, who, I think, had never been down a mine before, was somewhat astonished to hear the buzzing of a blow-fly in the drives 100 feet below the surface, but I suppose it is generally known, that not only flies but other creatures higher in the scale of animal life constantly find their way down mines of all kinds, and that to much greater depths than 100 feet.

But to return to Kilcunda and thence to Griffith's Point, but through the bush this time, the way the crow flies, and our first day's tour was over.

In a day or two afterwards we found ourselves *en route* for Cape Woollamai, the south-east point of Phillip Island, so crossing the channel in a boat, after walking some distance down the inner coast we struck across the sand hummocks to the outer or south coast of the island. On the way we were much interested in observing the numerous lime pipes, as they are called, lying about or rather sticking out above the surface of the sand in all directions, and sometimes assuming the most fantastic shapes. They would appear to have been caused by the rain water, which, of course, contains some Carbonic Acid or Carbon dioxide, falling on the Calcareous sand (for it abounds in comminuted shells), dissolving the lime, and holding it in solution as Bi-carbonate, and then depositing it on the surface of the roots of trees and shrubs, along which, of course, the water would trickle most, on the principle of a French drain. I noticed what I took to be the decayed remains of a root in almost every pipe I saw; the wood of course rotting away in time, leaves the lime pipes hollow, and as the surface of the sand is constantly shifting, as it is blown away by gales of wind, the lime pipes are left exposed and sticking up in all directions.

On the other side of the island we found the older or miocene Basalt, exposed in good sections, full of little nodules of *Steatite*, (Hydrated Silicate of Magnesia), and also containing here and there veins and patches of *Vivianite*, (Hydrated Phosphate of Iron), decomposing into what is commonly called Blue Earth. As we went on our ramble, we halted for luncheon at a most tempting looking spring of water, as clear and limpid as rock-crystal, oozing out of the upper surface of the low cliffs, and trickling down by a succession of little miniature cascades into the sea below, and being excessively thirsty after our heavy and wearisome tramp over the sand hummocks, we drank with more zest than caution. We felt no ill effects from it at the time, and proceeded on our course to Cape

Woollamai, and after collecting a few specimens of the red granite of which it is composed, which in some places is almost giant granite on account of the size of its constituent crystals, we returned homewards, and all we noticed of interest on the way back to the Point was the angle of rest of the grains of dry sand in the sanddunes, and which we found, by means of my pocket clinometer, to be as usually represented, exactly 30°. An incident of which I have too vivid and painful a remembrance to require the aid of memorandum or note book, occurred to both of us at exactly the same time in the following night. I remember waking up at about one a.m., and under a dim consciousness of uneasiness heaving a few deep and heavy sighs. I then noticed that my entomological friend who was occupying a bed at the other end of the room, was also awake, and "sighing like a furnace." At last, after we had sighed on in silence for a few moments, he said to me, "Don't you feel well?" "No," I replied; "I don't feel well at all; how do you feel?" "Oh, I am very ill;" and "So am I." I draw a veil over the next few hours, suffice it to say that we were both attacked with very severe sickness, and other such alarming symptoms, that my friend would have it that some ill-disposed person had put some poison in our supper overnight, but, however, it dawned upon us both before the morning light that it was all owing to the Phillip Island water, and we only regretted we hadn't brought a sample of it home with us to have it analysed. We learnt too, next day, that symptoms such as these often attack people who drink too freely of the spring water on the coast of the island, and we only wished we had known that a day earlier. As it is, I chronicle this little piece of information for the sake of other tourists, and warn them if they ever go to Phillip Island and see a spring of clear, limpid, crystal water, flowing temptingly out of the rock in the neighbourhood of Cape Woollamai, Beware! and if they incline to drink it, Don't! for beautiful as it may appear, such beauty is deceitful, and nice as it may taste, the after consequences are not pleasant.

I should have mentioned that on one of the days of our stay at Griffith's Point, I think the second, we devoted a great part of our time to searching after marine objects only, and in doing so we found a most helpful ally in the local fisherman. This man who was decidedly an "original" and amused us all day with his quaint remarks, took a real interest in natural history, and in looking after *curios* as he called them. He took us in his boat for a trifle to a couple of low rocky islets, about half a mile away from Griffith's Point, but on the opposite side of the water, just off the east end of Phillip Island. These two rocks cover and uncover with the tide, and being low tide at that time, we managed by turning over the stones and groping with bare arm in the crevices and under the ledges of the rock, to get an excellent haul of Sponges, *Hydroid Polypes*,

Polyzoa, *Holothuriæ*, *Echinoderms*, *Crustacea*, and *Mollusca*, many species of which though probably not new to science were new to us. Unfortunately, however, most of the treasures we got here were mislaid and lost, at least upon this occasion, and hitherto I have been speaking of a visit paid to Griffith's Point and its neighbourhood about two years ago.

About two months ago, however, I had the opportunity of paying another visit to Griffith's Point, with another fellow tourist who is also an eminent member of the Melbourne Microscopic Society, but although we laid ourselves out expressly in the search for marine objects, and made it our chief business to get over to these same rocks with the help of our old friend the fisherman, we didn't succeed in getting anything like so good a haul as before owing to the tide not being so low, still we managed to scrape together some very fair specimens, and what we did get, we brought away with us. Amongst the *Mollusca* perhaps the most interesting were several very large specimens of *Parmophorus Australis*, or Sea-Elephant in miniature as they call it at Griffith's Point, all alive, black and slimy. Several species of *Fissurella* or key-hole limpet, some *Terebratulidæ* including *Terebratulina caput serpentis* (or what answers to it in these waters,) and *Waldheimia flavescens*. A large *Saxicava*, and several species of *Chitons*, *Ascidians* and *Salpa*. Of the *Crustacea* we found many of the commoner and familiar forms, but the only specimens which were new to me, although they may be familiar to other naturalists, are a species of crab which I take to belong to the genus *Ceryonome* and another resembling a *Hyas*. Of the *Echinodermata*, we recognised several common forms of *Holuthuriæ* or sea cucumbers, *Sipunculus*, as well as *Echini*. Some gorgeously colored star-fish of the *Goniaster* type which however lost their beauty as soon as the moisture was dried out of them.. Then there was a profusion of sponges, *Corallines* and *Polyzoa*, &c , which I will not attempt to particularize. But although we met with comparatively poor success on this last occasion, the few specimens we did get, just serve to show what a splendid haul might be made under the more advantageous circumstances of a lower tide, more time and patience, and better appliances than we took with us. So if anyone should happen to be in search of a really good hunting ground for marine objects of interest, I have much pleasure in recommending the Griffith's Point rocks as the place, and the Griffith's Point fisherman as the pioneer. Whilst here this last time, we got our fisherman to take us a sail to Elizabeth Island, about six miles down the bay in search of *Trigonias*, and found on the shore of the island a great profusion of shells of the single species *margaritifera*. In fact they were as common there as cockles are on the Brighton Beach. We also found a good many shells of *Waldheimia flavescens*,

but what is peculiar, although these two species of, with us, rare shells are so common on the shore of Elizabeth Island, the commoner shells that we are accustomed to see on the beaches of Port Phillip Bay were hardly represented at all. On the way to this island, we made use of a small naturalist's dredge that I happened to have with me, but did not succeed in getting anything of importance beyond a live *Waldheimia flavescens*, attached by the peduncle to the shell of an *Arca*, and a large *Voluta*, containing a live hermit crab. As a rule, the dredge came up with nought else but a load of broken shells, sand, and seaweed. Just as we were about to return, the wind fell, and so we had to betake ourselves to rowing to save the unpleasant alternative of having to stay out in the Bay all night, and as it was, only succeeded in reaching the Griffith's Point pier at about ten p.m., just at slack water, and had we been a quarter of an hour later we should have had the tide against us, and in spite of all we could do to the contrary, would have been carried far back on the way to Elizabeth Island, and had to stay out all night in the Bay. This narrow shave, however, we considered was altogether owing to our friend, the fisherman, who would persist in declining our offers of help, and rowing the boat himself, and then, regardless of the law of conservation of energy, would persist in entertaining us with snatches of songs on the way, and stopping every now and then to deliver himself of philosophical reflections, one of which I must, for the sake of the ladies, place on record. He was an enthusiastic admirer of the fair sex, and gave it as his mature conviction that "women was everything and men was nothing.' My fellow-tourist gently remarked that Adam was created before Eve, upon which he immediately rejoined, "Oh! show me what a man is and I'll tell you what his mother was."

But, however, to return to the subject. We arrived at the Griffith's Point pier just in the nick of time, feeling very cold, tired, and with a "sensation of emptiness about the commissariat department," as the fishermen humorously put it, but very thankful for the narrow escape from being out in an open boat all night in Western Port Bay, with the certainty of catching our deaths with cold, for it being very hot when we started, we had improvidently neglected to take wraps.

On the following day, having business in town, I left my friend to pursue his microscopical investigations alone and returned homewards, and so ended my last visit to Griffith's Point.

ERRATA.

On Page 122, for "*purpurata*" read "*piperata*."

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